Spiders of New Zealand

annotated family key & species list

Pierre Paquin
Cor J. Vink
Nadine Dupérré

Illustrations by Nadine Dupérré

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DEDICATION

This book is dedicated to the memory of Raymond Robert Forster (1922–2000), New Zealand's greatest arachnologist (Patrick *et al*. 2000). Ray described about 60% of the known New Zealand spider fauna and was a key figure in worldwide spider systematics. Ray also encouraged other spider systematists to work on the New Zealand spider fauna and without Ray's colossal contribution, New Zealand spider taxonomy would be little better than it was in the 1940s. Without his taxonomic legacy, this publication would not have been possible.

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Manaaki Whenua PRESS

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Front cover

The spider featured is *Trogloneta* sp. (Mysmenidae). Like many New Zealand spiders, the species is still undescribed and its assignment in an Old World genus remains doubtful.

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AUTHORS

Pierre Paquin
Cave and Endangered Invertebrate Research Laboratory
SWCA Environmental Consultants
4407 Monterey Oaks Boulevard
Building 1, Suite 110
Austin, Texas
78749, U.S.A.

ppaquin@swca.com

Cor J. Vink
Biosecurity Group
AgResearch, Lincoln Science Centre
Private Bag 4749
Christchurch 8140, New Zealand

&

Entomology Research Museum
PO Box 84, Lincoln University
Canterbury 7647, New Zealand

cor.vink@arachnology.org

Nadine Dupérré
American Museum of Natural History
Division of Invertebrate Zoology
Central Park West at 79th Street
New York, New York
10024, U.S.A.

nduperre@amnh.org

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Finally, Pierre Paquin and Cor Vink express their deepest gratitude to their co-author Nadine Dupérré. Without Nadine to anchor the *two cocos*, this project would still be pure fiction. Nadine is not only an accomplished arachnologist and obviously a very talented illustrator, but she tolerates our very debatable sense of humour. The never-ending laughs that the three of us shared through the wonders of the internet have – without a doubt – moved New York, Austin and Lincoln a bit closer.

TABLE OF CONTENTS

Dedication ii
Authors v
Acknowledgments vi
Introduction 1
Key to spider families 14

Phylogenetic order

Hexathelidae 25
Nemesiidae 26
Migidae 27
Idiopidae 28
Gradungulidae 29
Segestriidae 30
Dysderidae 31
Oonopidae 32
Orsolobidae 33
Pholcidae 35
Scytodidae 36
Periegopidae 37
Oecobiidae 38
Mimetidae 39
Malkaridae 40
Huttoniidae 41
Micropholcommatidae 42
Holarchaeidae 43
Pararchaeidae 44
Mecysmaucheniidae 45
Deinopidae 46
Uloboridae 47
Araneidae 48
Tetragnathidae 50
Nephilidae 51
Theridiosomatidae 52
Mysmenidae 53
Anapidae 54
Linyphiidae 55
Cyatholipidae 58
Synotaxidae 59
Theridiidae 61
Nicodamidae 63
Dictynidae 64
Hahniidae 65
Zodariidae 66
Sparassidae 67
Anyphaenidae 68
Clubionidae 69
Corinnidae 70
Zoridae 71
Salticidae 72
Thomisidae 74
Lamponidae 75
Gnaphosidae 76
Stiphidiidae 78
Agelenidae 80
Desidae 82
Amphinectidae 85
Amaurobiidae 87
Tengellidae 88
Miturgidae 89
Cycloctenidae 90
Zoropsidae 92
Oxyopidae 93
Pisauridae 94
Lycosidae 95

Alphabetical order

Agelenidae 80
Amaurobiidae 87
Amphinectidae 85
Anapidae 54
Anyphaenidae 68
Araneidae 48
Clubionidae 69
Corinnidae 70
Cyatholipidae 58
Cycloctenidae 90
Deinopidae 46
Desidae 82
Dictynidae 64
Dysderidae 31
Gnaphosidae 76
Gradungulidae 29
Hahniidae 65
Hexathelidae 25
Holarchaeidae 43
Huttoniidae 41
Idiopidae 28
Lamponidae 75
Linyphiidae 55
Lycosidae 95
Malkaridae 40
Mecysmaucheniidae 45
Micropholcommatidae 42
Migidae 27
Mimetidae 39
Miturgidae 89
Mysmenidae 53
Nemesiidae 26
Nephilidae 51
Nicodamidae 63
Oecobiidae 38
Oonopidae 32
Orsolobidae 33
Oxyopidae 93
Pararchaeidae 44
Periegopidae 37
Pholcidae 35
Pisauridae 94
Salticidae 72
Scytodidae 36
Segestriidae 30
Sparassidae 67
Stiphidiidae 78
Synotaxidae 59
Tengellidae 88
Tetragnathidae 50
Theridiidae 61
Theridiosomatidae 52
Thomisidae 74
Uloboridae 47
Zodariidae 66
Zoridae 71
Zoropsidae 92

Bibliography 96
Glossary 106
Taxonomic index 109

INTRODUCTION

Brief history

The last key to the New Zealand spider families was published by Ray Forster in 1967 and provided an overview of the 33 families known at that time. From 1967 to 1988, Forster and his collaborators produced a massive amount of taxonomic work published in several monographs at the Otago Museum as *The Spiders of New Zealand* series [Part I: The Spiders of New Zealand (Forster 1967) – Part II: Ctenizidae and Dipluridae (Forster 1968); Migidae (Wilton 1968) – Part III: Desidae, Dictynidae, Hahniidae, Amaurobioididae, Nicodamidae (Forster 1970b) – Part IV: Agelenidae, Stiphidiidae, Amphinectidae, Amaurobiidae, Neolanidae, Ctenidae, Psechridae (Forster & Wilton 1973) – Part V: Cycloctenidae, Gnaphosidae, Clubionidae (Forster 1979); Linyphiidae: Mynogleninae (Blest 1979) – Part VI: Cyatholipidae (Forster 1988); Linyphiidae (Millidge 1988a); Araneidae: Araneinae (Court & Forster 1988)]. Subsequently, Forster also collaborated with N.I. Platnick and other arachnologists, and published several important revisions [Orsolobidae: Forster & Platnick 1985; Anapidae: Platnick & Forster 1989; Synotaxidae: Forster *et al.* 1990; and other families: Forster & Platnick 1984; Forster *et al*. 1987].

This intense period of arachnological activity resulted in several changes to New Zealand spider taxonomy, but still no updated key was available to facilitate their identification at the family level. To fill this gap, in 1995 Cor Vink produced an unpublished family key with a list of taxonomic references. This key was designed to be used in combination with the illustrations found in *The Spiders of New Zealand* series.

About ten years later, Cor Vink, Pierre Paquin and Nadine Dupérré were at San Diego State University (California, U.S.A.) and discussed the possibility of producing a fully illustrated family key. This project would provide the information needed to identify the spider families of New Zealand, summarise the current taxonomic knowledge, identify the main gaps and problems, and refer to key publications for species level identification.

In early 2008, thanks to funding from the New Zealand Department of Conservation, Pierre Paquin was able to visit for three months and begin work on the project in earnest. Since then, all three authors have been working in their own time, sending specimens, illustrations and text amongst each other in order to produce this book. The key presented here includes the 57 families known from New Zealand. Despite limitations (see below), we hope that it will draw attention to New Zealand spiders and help inspire future kiwi arachnologists.

With feedback and collaboration, the present effort may lead to subsequent editions that we hope can include a generic and specific treatment of the New Zealand spiders.

Organisation of the manual and limitations

The introduction provided here is relatively short to avoid duplication of information available in other identification manuals [Roberts (1985, 1987), Dippenaar-Schoeman & Jocqué (1997), Deeleman-Reinhold (2001), Paquin & Dupérré (2003), Ubick *et al.* (2005), Jocqué & Dippenaar-Schoeman (2006), among others]. The anatomy section and the glossary are included to enable users to use the key without referring to other documents. Collection and field techniques, curation of an alcohol collection, spider ecology, development and behaviour are not addressed here and interested readers should consult the monographs mentioned above. We have not provided many details about natural history except for a few notes about habitat preferences. We recommend *Spiders of New Zealand and their Worldwide Kin* by Forster & Forster (1999), which is an excellent account of the natural history of New Zealand spiders and a robust introduction to arachnology. For readers interested in biological aspects of spiders such as reproduction, internal anatomy and development, we recommend *Biology of Spiders* by Foelix (1996).

The present publication follows the general treatment and graphic style developed in Paquin & Dupérré (2003) and subsequent improvements in Ubick *et al.* (2005). In the introductory chapter, we briefly outline spider anatomy, the geographic coverage of the book, give a list of abbreviations, and provide some tips for specimen examination. We also briefly treat the medical importance of spiders and provide a list of the species that are frequently found in and around houses. Finally, the spider fauna is summarised in a table that reports the number of species currently known, and includes an approximation of the total number of species that may occur in New Zealand.

The second chapter is a dichotomous key to the families with illustrations of relevant morphological characters. The following chapters consist of the individual treatments of the 57 families and contain the following fields:

Diversity – the number of genera and species actually described in the family.

Summary description – major traits of the family.

Diagnosis – characters that distinguish the family from others.

Similar families – the main morphological attributes that distinguish them from most similar families.

Taxonomic notes – a summary of the taxonomic status and knowledge of the family with comments from experts.

Key references – relevant papers, particularly for species level identification.

Endemicity, habitat and distribution – a summary of biological traits and distributions.

Classification and nomenclature notes – names that have been used in previous taxonomic publications and related information.

That last chapters consist of a full bibliography of all the references cited (including the references to all original descriptions of the species, genera, subfamilies and families), a glossary of the morphological terms used in the manual, and a complete taxonomic index of all the scientific names cited.

There are two major modifications from the format and structure used in Ubick *et al.* (2005). The first modification is the addition of a detailed species list of all species described to date in each family. These lists are organised in subfamilies, where possible, and all scientific names are given with their authors and full references. An asterisk [*] before a species name indicates that it is the type species of the genus. Also, for a few species, we have included a code before the species name that refers to its status regarding endemicity and/or presence: [*AI*] *Anthropogenic Introduction* – species that have likely been introduced to New Zealand by human activities; [*NI*] *Natural Introduction* – species that are thought to have arrived without human intervention (natural dispersal); [*RLE*] *Reported but likely an error* – species that have been reported but current knowledge suggests that this is incorrect; [*RNE*] *Reported but not established* – species that have correctly been reported in the country, but were apparently not able to establish viable populations. By default, the absence of any of these codes refers to an endemic species. In the cases where species are known only from specific remote islands (see Fig. 1.1), we indicated their distribution using a two letter code following Crosby *et al.* (1998) (see abbreviation list), and in a few cases, the occurrence on remote islands and on the main two islands (indicated by NZ). Importantly, species lists are used as figure captions for all illustrations that are relevant for species level identification. In a few cases however, it was not possible to associate the specimen and its illustrations with a name, either because of insufficient taxonomic knowledge or because it represents an undescribed taxon. These problems can be resolved only by taxonomic revisions and we use a *genus a*, *species b* system in these cases.

The second important modification is a phylogenetic organisation of the chapters from mygalomorphs to araneomorphs based on Coddington (2005a). This system groups families that are phylogenetically close together and consequently, most similar spiders are in the

same area of the book. A simple look in the next or previous pages allows one to examine families that are similar. The problem with this system is that families cannot be found by alphabetical searching. To solve this difficulty, each of the main pages of the families has a vertical tag with the family name. These tags are placed along the edge of the page according to their alphabetical position. For example, all families that begin with the letter A have a black tag placed in the upper section of the page. To search for family names alphabetically, one just has to look at the book side-on and search among the tags at the appropriate position from A to Z, from the top to the bottom of the pages. We hope that this innovative graphic tool satisfies proponents of both alphabetical and phylogenetic listings.

During the preparation of this book, we encountered several difficulties. The main one was the lack of diagnostic characters that clearly discriminate Amaurobiidae, Desidae, Amphinectidae and, to some extent, Agelenidae. The second difficulty was the treatment of taxa that have received little or no taxonomic attention. For instance, some families are known from New Zealand, but no species have been formally described (i.e. Mysmenidae, Theridiosomatidae, Malkaridae). The illustrations provided here are likely precise enough to recognise species, but should not be considered as descriptions. In many cases, genitalia are illustrated here for the first time, particularly internal female genitalia (e.g. Oonopidae, Huttoniidae, Periegopidae), to provide a representation of the family. In a few cases, despite repeated efforts, we could not access the specimens needed to illustrate key structures and Forster's original illustrations were re-drawn and indicated as such.

The resolution of the abovementioned taxonomic problems is beyond the scope of this project and we hope that the present book will help stimulate further research on New Zealand spiders, which are a unique and important part of the world biodiversity.

Geographic coverage

This identification manual is for spiders found in New Zealand, including all outer islands of the New Zealand subregion (Fig. 1.1). Unless specified otherwise, all statements found in the texts about taxonomy, knowledge and distributions pertain to New Zealand.

Abbreviations, codes and conventions

The codes used in the species lists are detailed below. The geographical abbreviations follow Crosby *et al.* (1998).

NZ	New Zealand
AN	Antipodes Islands
AU	Auckland Islands
BO	Bounty Islands
CA	Campbell Island

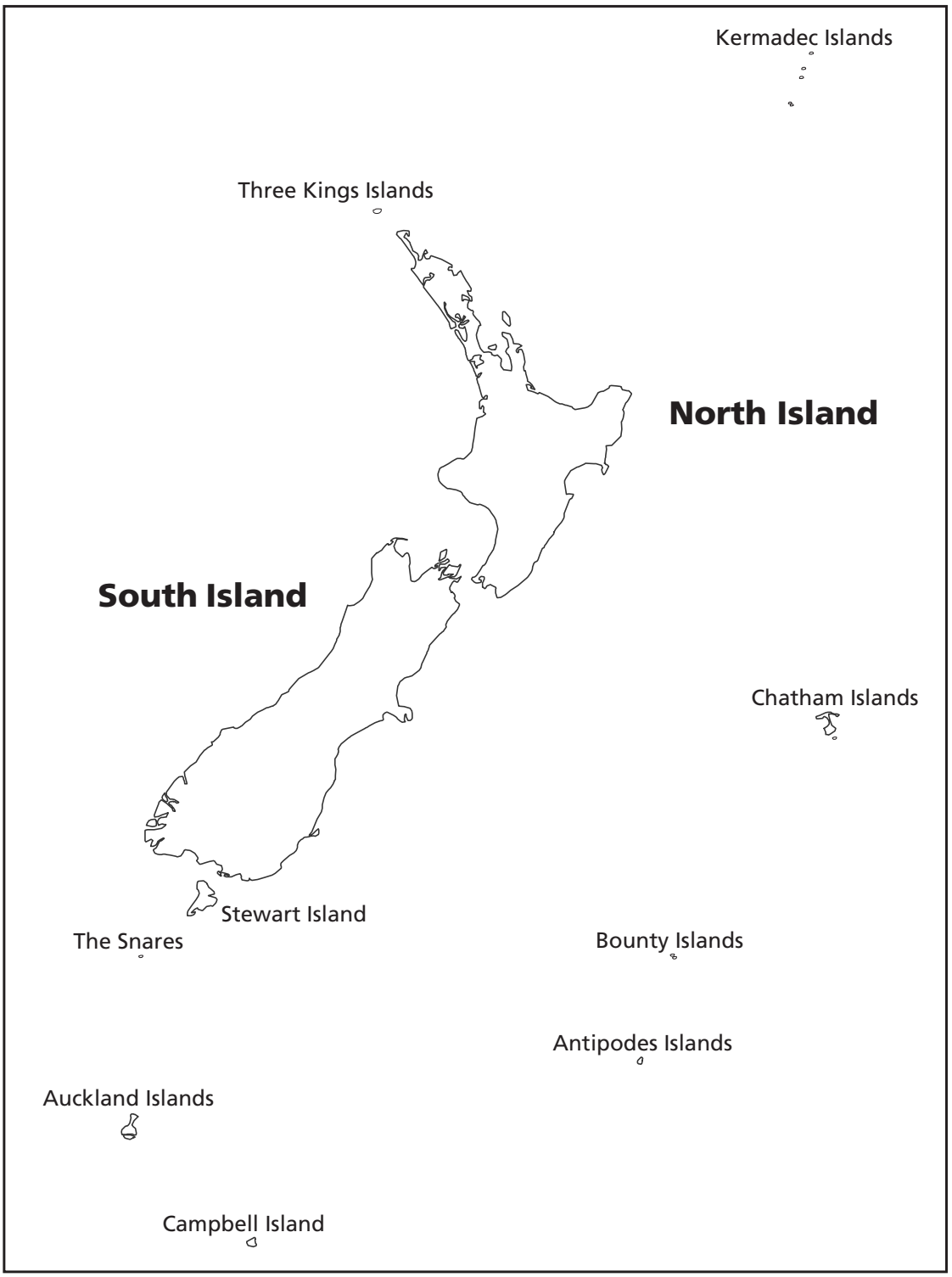


Fig. 1.1 The New Zealand subregion

CH	Chatham Islands
KE	Kermadec Islands
SN	The Snares
TH	Three Kings Islands

[*]	Type species
[AI]	Anthropogenic introduction
[NI]	Natural introduction
[RLE]	Reported but likely an error
[RNE]	Reported but not established

In the family key

PME	posterior median eyes
PLE	posterior lateral eyes
AME	anterior median eyes
ALE	anterior lateral eyes
PER	posterior eye row
AER	anterior eye row
ALS	anterior lateral spinnerets
PMS	posterior median spinnerets
PLS	posterior lateral spinnerets

We also used the following convention for the size of spiders (body length):

minute	0–2 mm
small	2–6 mm
medium	6–12 mm
large	12–24 mm
very large	24+ mm

By convention, the left male pedipalp is illustrated (spider observed in dorsal view).

Specimen preparation

Spiders are best preserved for morphological examination in 70–75% ethanol. If DNA is also to be preserved, specimens should be stored at -20°C or less and in 95–100% ethanol (Vink *et al*. 2005). Storage in 95–100% ethanol alone will not preserve DNA. Unfortunately, this concentration of ethanol makes specimens brittle, which can be unsuitable for morphological examination. If specimens are required for morphology and DNA, store specimens in 70–75% ethanol and at -20°C or less. Morphological features used for identification are best seen with a dissecting microscope [stereoscope]. Specimens are examined in ethanol in a dish containing washed quartz sand or glass beads. A pair of forceps or fine tweezers should be used for manipulating the specimens. Water-based, water-soluble lubricants [such as K-Y® jelly, or any equivalent brand] can also be used to position and orient small spiders and delicate structures. The use of this clear jelly provides a much more stable, long lasting medium for examination, which is optimal for precise positioning, if needed. After examination, the structures should be washed in water to dissolve the jelly that remains.

External sclerites of the epigynum can be viewed in situ. However, the abdomen may be shrivelled, which can obscure or distort the epigynum. It may also be necessary to remove setae or copulatory plugs from the epigynum to clearly examine the structures. Internal genitalia are best seen when dissected out. A hypodermic needle or a fine entomological pin make ideal tools for cutting the cuticle around the epigynum. The dissected genitalia is then placed in either lactic acid or 10% KOH solution for 1–3 hours at 37°C to clear and dissolve the soft tissue to facilitate examination. The structure is then rinsed in water prior to viewing in ethanol. An optical microscope [light microscope] and a slide preparation may be needed to examine very small genitalia.

The features of the male pedipalp are best viewed by removing the left pedipalp at the junction between the trochanter and the femur. If the specimen has been stored in 95–100% ethanol, it is best to examine the palp in the same concentration of ethanol. A palp transferred from 95–100% ethanol into 70–75% ethanol may expand and make viewing the diagnostic structures difficult. It is important to examine the structures at the same angle that diagnostic illustrations have been drawn at.

Dissected epigynes and palps should be stored in small genitalia vials filled with ethanol, and kept together with the specimen.

There is no easy way to identify immature spiders with confidence because taxonomic keys rely heavily on characters present in adult spiders that may not be present in previous instars, even at a family level. Immature spiders may be reared to adult, or have a portion of DNA sequenced for comparison with sequences of adult or identified specimens.

Trichobothria and the unpaired claw (third claw) are key characters that can be difficult to observe. To differentiate trichobothria from other setae, use a black background that facilitates the distinction of the thin, perpendicular trichia that sit in sensory sockets. Trichobothria can also be revealed by moving a needle through the ethanol beside the leg: trichobothria will move around with the wave action of the ethanol, while regular setae will not. To detect the presence of a third claw, gently squeeze the middle of the tarsus or metatarsus; the resulting hydraulic pressure makes the claw go erect. Experience is, however, the best way to develop knowledge to properly recognise morphological features that are difficult to observe.

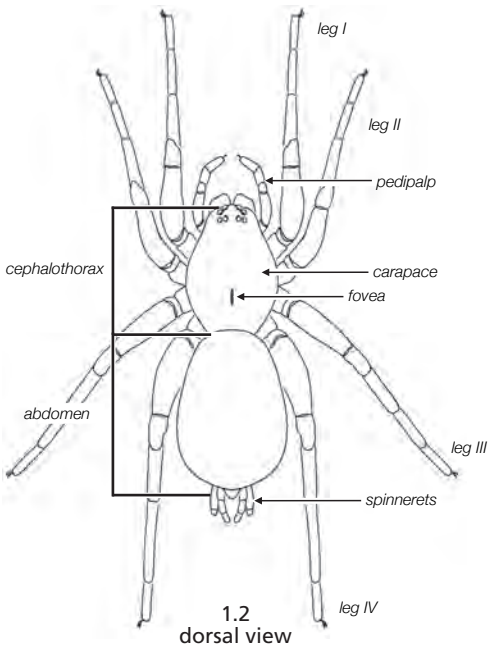
Anatomy

This section is largely translated, and slightly modified, from Paquin & Dupérré (2003). It is included here to provide information on spider anatomy that is needed for the family key. Readers interested in a more detailed account of the topic are referred to the monographs listed earlier.

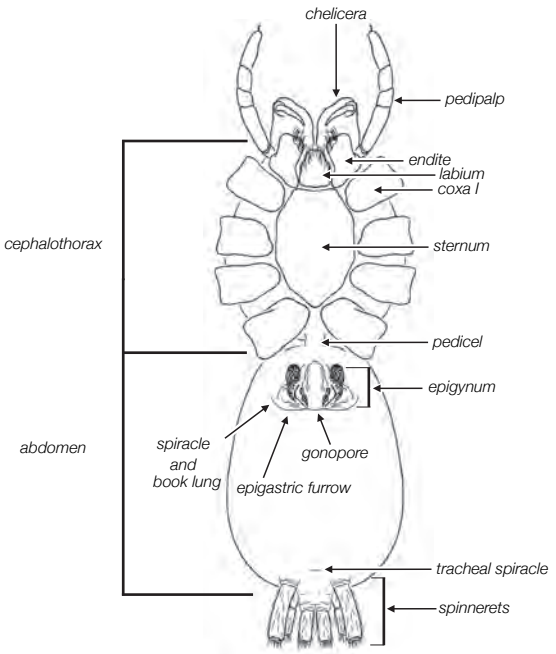
Spiders have two body parts: the anterior part is the *cephalothorax* (also called the prosoma), and the posterior part is the *abdomen* (also called the opisthosoma). These two parts are connected by the *pedicel* (Figs 1.2–1.4). This two-part anatomic plan is a useful feature to distinguish spiders from insects (which have three parts: head, thorax, abdomen) and some other arachnids, such as opilionids and mites, which only have one part (a fused cephalothorax and abdomen).

The cephalothorax comprises structures such as the eyes, the mouthparts and the legs. The dorsal portion of the cephalothorax is a sclerotised shell area called the *carapace*, and the corresponding ventral sclerite is the *sternum*. The *fovea* (also called the dorsal groove) is a shallow depression found in the middle of the carapace that corresponds internally to a muscle attachment point. *Legs* are attached to the cephalothorax in the membranous area located between the carapace and the sternum.

Eyes are found on the anterior part of the cephalothorax. Most spiders have eight eyes, but some have six, and a few rare troglobites have no eyes at all. The variability in the number of eyes and their arrangement on the cephalothorax provide excellent characters to identify spider families. The eyes are arranged in two rows: the *anterior eye row* (often abbreviated as AER) and the *posterior eye row* (often abbreviated as PER) (Fig. 1.5). The eye rows can be straight, procurved or recurved. The eyes located in the centre are the median eyes, and those on the side are the lateral eyes. Depending on their position in the eye rows, each eye pair has a specific appellation: *posterior median eyes* (PME), *posterior lateral eyes* (PLE), *ante-*



1.2
dorsal view



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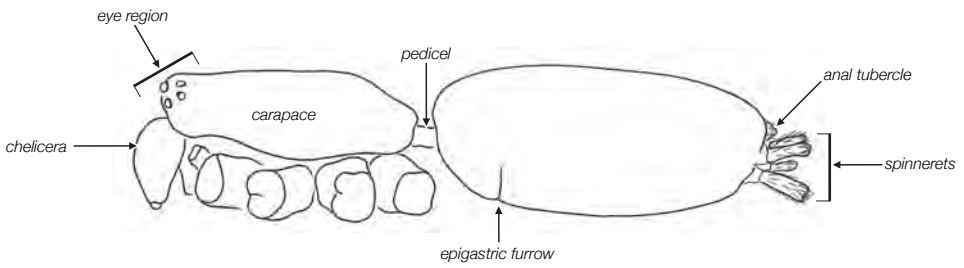
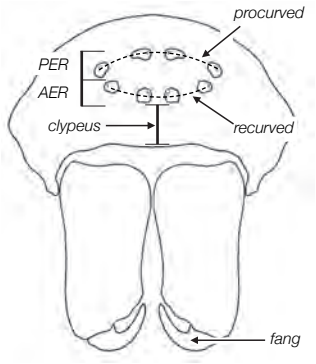
ventral view



1.4
lateral view



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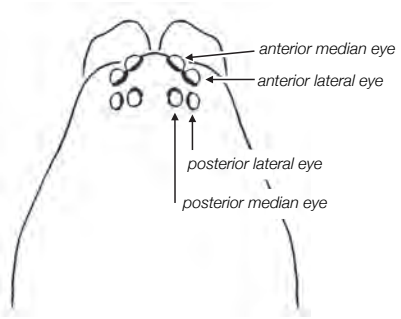

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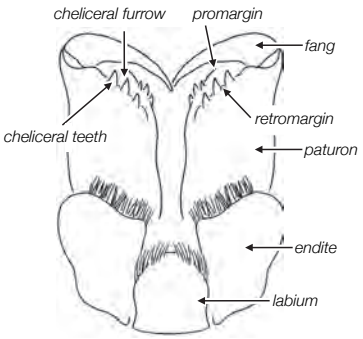

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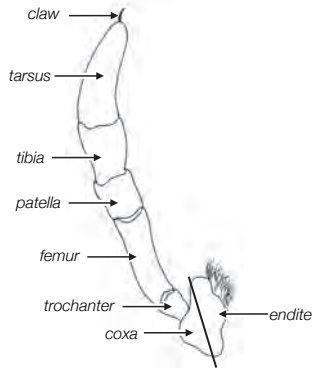

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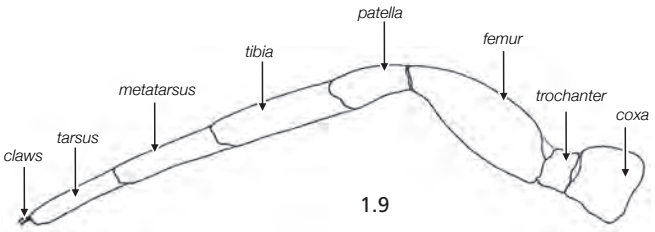

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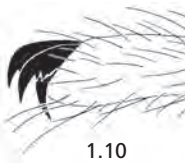

1.10

1.11

1.12

rior median eyes (AME), *and anterior lateral eyes* (ALE) (Fig. 1.6). The area between the median eyes and the lower margin of the carapace, above the chelicerae, is the clypeus.

Mouthparts are formed by two pairs of appendages and the anterior extension of the sternum, the labium. The first pair, the *chelicerae* (singular chelicera), is located in front of the oral cavity, and the second pair, called *pedipalps* (or simply palps), is located behind the oral cavity. Chelicerae consist of two parts: the robust basal segment is the *paturon*, on which the *fang* is articulated (Fig. 1.7). The common use of the term chelicera, however, usually refers to the paturon only. When spiders bite, they inject venom through a small opening located at the tip of the fang. A female pedipalp resembles a small leg, but it lacks a metatarsus and may bear either one or no claws (Fig. 1.8). The first segment is divided in two zones: the area that joins the other leg segments is the *coxa*, and the lateral extension is called the *endite*. Between the endites, the *labium* encloses the oral cavity (Fig. 1.7). The endites, along with the labium, play a role in food mastication with movements that are opposed to those of the chelicera. The distal end of the paturon has several features used as taxonomic characters: the fang rests in a *cheliceral furrow*, which may have *cheliceral teeth*. The margin located anteriorly is the *promargin*, and posteriorly is the *retromargin*. Male pedipalps are similar to the female pedipalps, except for the terminal segment, which is modified into a copulatory structure. The tibia may also have modifications such as spines and apophyses. The modifications of the male pedipalp represent an extraordinary array of structures that are essential in spider taxonomy.

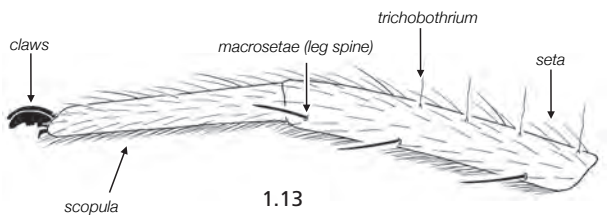
Spiders have four pairs of *legs,* which are attached to the cephalothorax behind the pedipalps. The anterior pair of legs is the first pair (leg I) and the coxa of this leg is referred to as coxa I. Other pairs of legs and segments are denoted by consecutive Roman numerals (Fig. 1.2). The basalmost segment is called the *coxa*, followed by the *trochanter*, *patella*, *tibia*, *metatarsus* and *tarsus*, which bears the claws (Fig. 1.9). There are either two or three claws (Fig. 1.10), with or without pectinations, along with different types of specialised setae, all of which provide useful taxonomic characters. Some claws are difficult to properly examine because of dense tufts (Fig. 1.11), while others have highly modified setae (Fig. 1.12). The hairs found on spider legs are called *setae* (singular: seta) and, along with *trichobothria* (singular trichobothrium) and *macrosetae* (commonly referred to as spines), their number and position are used as taxo-

nomic characters (Fig. 1.13). A trichobothrium is a very fine sensorial seta perpendicular to the leg and rooted in a depression of the cuticle. Trichobothria are mobile and are used to sense air movement and macrosetae are much thicker and not as flexible. On the legs of certain spiders, a dense area of setae is found on the ventral surface. This adaptive feature is the *scopula*, which provides grip to substrates. In some spiders, several specialised short recurved setae, aligned in one or two rows, are found on the dorsal surface of metatarsus IV. This particular structure is the *calamistrum* (Fig. 1.14), and is used to comb the silk produced from a flattened spinning plate called the *cribellum* (Fig. 1.15). Males of cribellate species have a very reduced cribellum, generally lacking spigots and should technically be referred to as colulate.

The abdomen is generally softer and more flexible than the cephalothorax. It contains the reproductive, respiratory and digestive systems, as well as carrying the spinnerets.

At the anterior end of the abdomen (in ventral view), the *epigastic furrow* is flanked by *spiracles* and *book lungs* (Fig. 1.3). The *gonopore* is located in the centre of the epigastic furrow, but is difficult to see. Additional respiratory openings (that are usually fused), called the *tracheal spiracles*, are located anterior to the spinnerets, but also may be difficult to find. The *spinnerets* are found at the posterior end of the abdomen and, in most spiders, these are arranged in three pairs (Figs 1.3, 1.15): the pair located closest to the venter is the *anterior lateral spinnerets* (*ALS*), the pair located closest to the dorsum is the *posterior lateral spinnerets* (*PLS*), and in between are the smallest, the *posterior median spinnerets* (*PMS*). In some mygalomorphs, the anterior pair is lost, resulting in only two pairs of spinnerets. The silk is secreted by small elongated structures found on the spinnerets that are called *spigots*. These structures, their size and numbers are used as taxonomic characters (Fig. 1.16)

Above the spinnerets, on the dorsal side, the *anal tubercle* covers the anus through which waste is excreted (Figs 1.3, 1.15). In some spiders, a sclerotised plate located anterior to the spinnerets on the ventral side forms a specialised spinning organ called the *cribellum* (Fig. 1.15). Through numerous small openings, a particular type of sticky silk is secreted and combed with the *calamistrum* (Fig. 1.14). Spiders that possess these morphological features are referred to as cribellate spiders. In many non-cribellate spiders, the cribellum is replaced by a non-functional vestigial structure called the *colulus* (Fig. 1.16).



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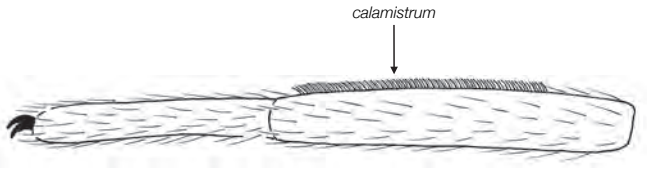

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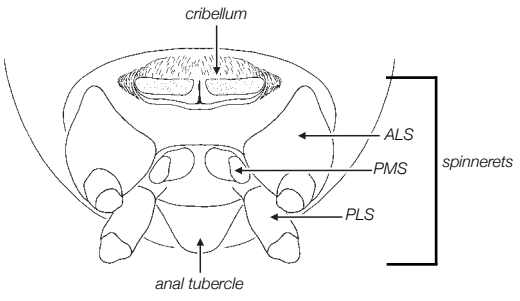

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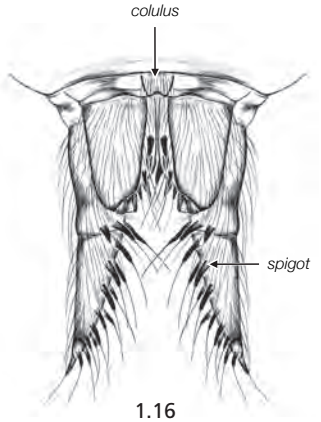


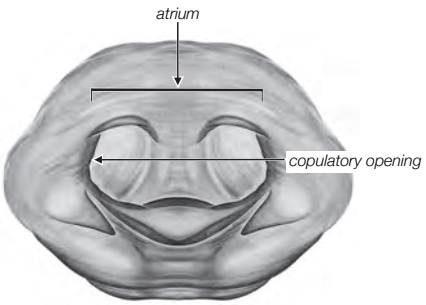
1.16

Genitalic structures

For entelegyne females, the gonopore is associated with a sclerotised plate and accessory structures that are collectively named the *epigynum* (Figs 1.3, 1.17). In the common usage, epigynum refers to the external portion of the genitalia, while the ensemble of the internal portion – which contains the sperm reservoirs (spermatheca), copulatory and fertilisation ducts – is usually referred to as *internal genitalia*, but sometimes called vulva by a few authors, despite that this term pertains to humans and, by extension, to mammals.

The external features of the female genitalia provide widely used taxonomic characters such as the shape of the *atrium* (Fig. 1.17), which is a small depression where the *copulatory openings* can be found. Some species have a well developed projection called the *scape* (Fig. 1.18). The internal genitalia also provide many important taxonomic features (Fig. 1.19) and require careful dissection and preparation in order to properly examine the structures. A major difficulty with the use of female genitalic characters is encountered in haplogyne females because mature individuals generally do not have pronounced external morphological characters; mature haplogyne females are often quite difficult to discriminate from immature individuals. However, there are differences, although not as obvious as in entelegynes. Adult haplogyne females have various differences from juveniles, such as a swollen gonopore region, more pigmentation, sclerotised positioning structures and sometimes the internal genitalia are visible through the integument.

In male spiders, the distal segment of the pedipalp is modified into a copulatory organ (Figs 1.20–1.24). In many cases, the tibia is also modified with spines (Fig. 1.20) or apophyses (Fig. 1.24), which also constitute important taxonomic characters. For Mygalomorphae and Haplogynae, the male pedipalp is usually rather simple and characterised mainly by the genital bulb (often simply called the bulb) and an attenuated terminal structure called the *embolus* (Figs 1.20–1.21). The embolus is the intromittent portion of the reproductive organ through which the sperm in transferred to the female. In most araneomorphs, the palpal tarsus, called the *cymbium*, is spoon-shaped and houses the genital bulb (Figs 1.22–1.24). The cymbium is sometimes elongated and the tip, best viewed ventrally, can be diagnostic. In araneomorphs, the genital bulb is a global term used to designate all the sclerites, apophyses and membranes that lie within the alveolus (cavity) of the cymbium. The features in male pedipalps form complex structures that are extraordinarily variable, but are unique to each species. Therefore, the male palp is commonly used for species level identification and the careful study of these components is a powerful tool in the assessment of phylogenetic relationships. However, the homology of these structures is not yet fully understood and is often confusing. Nonetheless, several features of the palp can be recognised fairly easily and are used in the family key. The embolus is an intromittent structure that is usually elongated (Figs 1.22–1.23), but its aspect and shape vary widely as it may be free or concealed. The embolus usually has an accessory sclerite, the *conductor*, which may be membranous or sclerotised. An additional structure, called the *median apophysis*, is sometimes present in the middle portion of the genital bulb. It can be straight, hook-shaped or otherwise. Finally, the tibia may have pointed projections, prongs, or accessory structures that are generally designated as the *tibial apophyses*.



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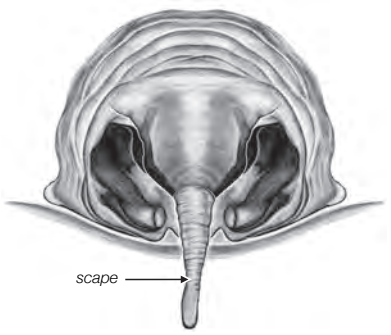

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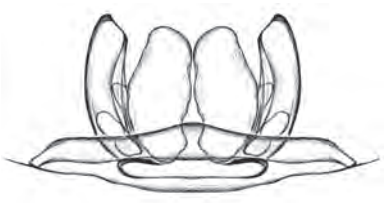
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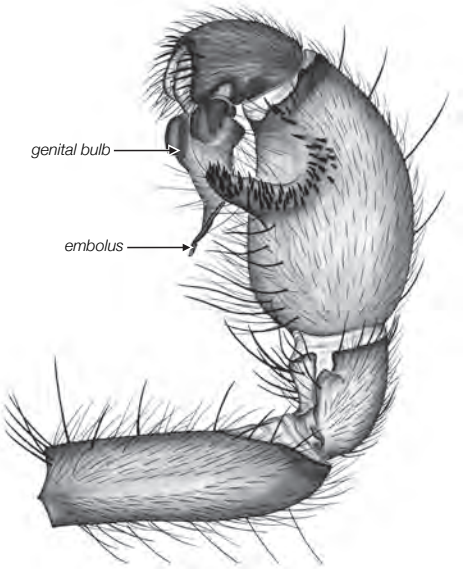

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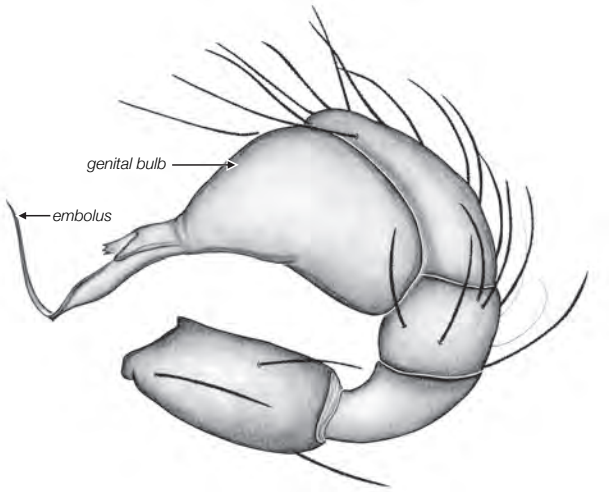

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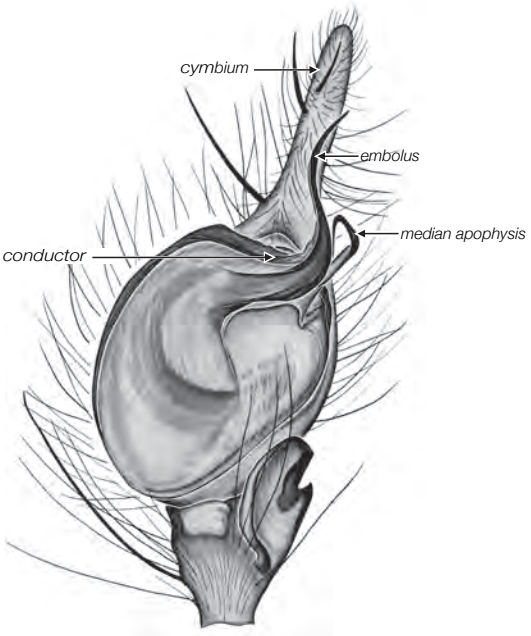

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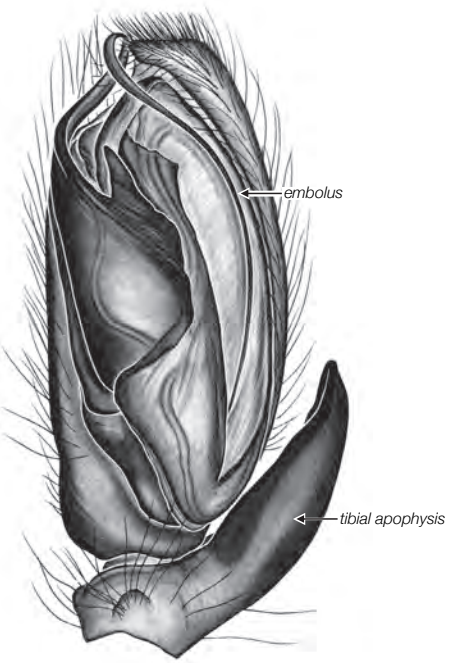

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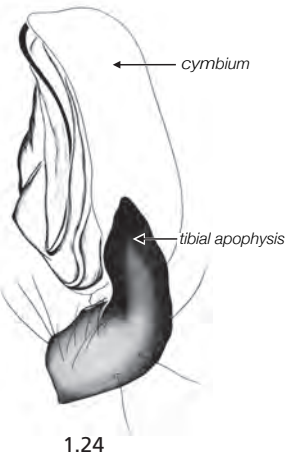


1.24

How to recognise adults and genders

In order to identify spiders, it is important to first establish the maturity of a specimen and its gender. Immature spiders rarely possess all the morphological features for species determination, and may be difficult to key even to a family.

In entelegyne spiders, immature individuals are recognised by the absence of an epigynum or fully developed pedipalps (Fig. 1.25A). The first male instars do not have any obvious modification of the pedipalp, and the first female instars have no structure in the epigynum area. It is not possible to determine the sex of early instars. Penultimate males (the last instar before the final moult to the adult stage) are recognised by the swollen tarsus of the pedipalp (Fig. 1.25B). In most females, the epigynum only appears at the adult stage, but sometimes, it is possible to detect an indistinct structure through the cuticle of penultimate individuals (Fig. 1.25C). Species that have a scape at the adult stage, have a cuticular projection at the penultimate stage. Penultimate female Lycosidae may possess sclerotised structures that are often mistaken for a fully developed epigynum. Mature males are recognised by the presence of sclerites, apophyses and membranes in the alveolus of the pedipalp tarsus (Fig. 1.25D), and mature females, by a well sclerotised epigynum and internal genitalia (Fig. 1.25E).

For haplogyne spiders, mature males are recognised by the presence of a genital bulb (Figs 1.20–1.21), which may be confused with the swollen segment of penultimate entelegyne males. In these cases, however, somatic characters can be used to recognise haplogyne families. Adult females are much more problematic as they often do not have obvious external feature to distinguish them from immatures. Again, somatic characters may be used to recognise haplogyne families. A few entelegyne families are secondarily haplogyne (e.g. Anapidae, Tetragnathidae) and care is needed to recognise adults.

Generally, increased pigmentation and sclerotisation can be used as an indicator for recognising mature individuals. There are, however, several species that are lightly pigmented and weakly sclerotised as adults. Similarly, size is an indicator of the degree of maturity, but variation among adults is likely to occur for most species.

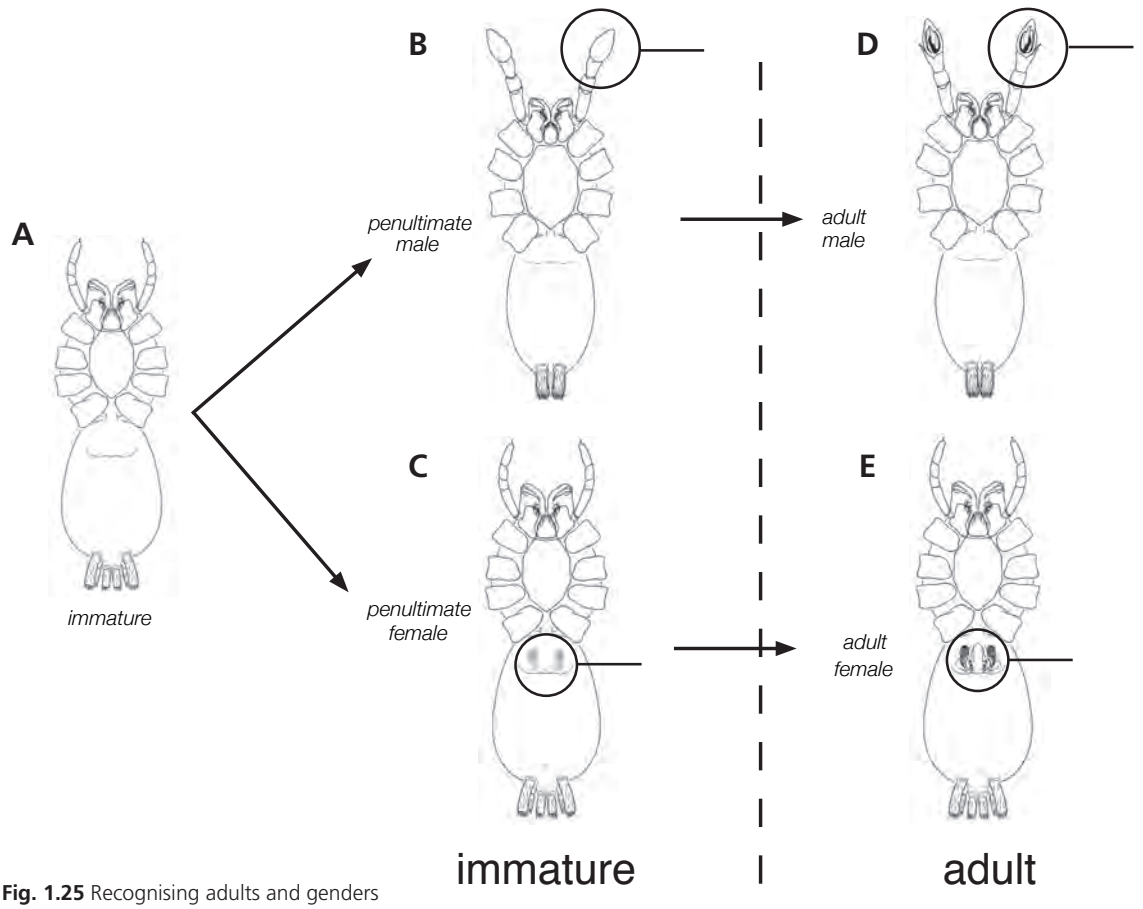


Fig. 1.25 Recognising adults and genders

Medical importance

Any medium-sized or larger spider is capable of piercing human skin with its fangs; however, most spiders rarely bite, and if they do, it seldom causes noticeable envenomation. In the rare cases where this occurs, the effects of the venom are usually localised and last no more than a couple of days. *Uliodon* spp. are known to bite when they are manipulated inadvertently. The bite can be painful but is usually without further consequence. The bites of *Lampona* spp. (white-tail spiders) are painful and can result in skin lesions, but none have caused necrotic ulcers (Isbister & Gray 2003, Banks *et al*. 2004, Derraik *et al*. 2008, Rademaker & Derraik 2009). Only two species, *Latrodectus katipo* and *Latrodectus hasseltii*, can be considered dangerous to humans (Slaughter *et al*. 2009). Bites are uncommon as these species are shy, non-aggressive spiders, but medical attention should be sought if envenomation occurs (see Slaughter *et al*. 2009).

Common species in and around houses

Included in this manual are illustrations of spiders frequently found in and around houses and buildings. These species are the subject of a large number of enquiries made to museums, universities, research organizations and government departments. Some of the most commonly encountered species are listed below along with their family and corresponding figure numbers:

Porrhothele antipodiana, Hexathelidae, Figs 3.1, 4.
Dysdera crocata, Dysderidae, Figs 9.1–4.
Pholcus phalangioides, Pholcidae, Figs 12.1, 4–6.
Backobourkia brounii, Araneidae, Figs 25.7–8.
Eriophora pustulosa, Araneidae, Figs 25.4–5.
Tenuiphantes tenuis, Linyphiidae, Figs 31.7–8.
Cryptachaea veruculata, Theridiidae, Figs 34.7–8.
Parasteatoda tepidariorum, Theridiidae, Figs 34.11–12.
Steatoda capensis, Theridiidae, Figs 34.15–17.
Steatoda grossa, Theridiidae, Figs 34.9–10.
Supunna picta, Corinnidae, Figs 42.1–4.
Helpis minitabunda, Salticidae, Figs 44.3–5.
Trite planiceps, Salticidae, Figs 44.1, 11.
Hypoblemum albovittatum, Salticidae, Figs 44.6–8.
Lampona cylindrata, Lamponidae, Figs 46.7–9.
Lampona murina, Lamponidae, Figs 46.1, 4–6.
Cambridgea spp., Stiphidiidae.
Badumna longinqua, Desidae, Figs 50.1, 5–7.
Badumna insignis, Desidae, Figs 50.2–4.
Uliodon spp., Zoropsidae.
Anoteropsis hilaris, Lycosidae, Figs 59.2–4.

Almost all the species above are introduced, except *P. antipodiana*, *T. planiceps*, *A. hilaris*, *Cambridgea* spp. and *Uliodon* spp. The endemic spiders found in houses are usually vagrant males. Various species of *Cambridgea* and *Uliodon* are found at different localities.

The New Zealand spider fauna

There are 1126 described species representing 236 genera and 57 families (Table 1). Approximately 93% are endemic species; 36 species were presumably introduced through human activities and 30 more are suspected to be natural introductions from elsewhere, mainly from Australasia. A remarkable element of the fauna is the endemic family Huttoniidae.

With the help of several experts, we were able to establish that 536 species await formal taxonomic description. Several of these evaluations are based on actual counts of undescribed taxa, and a few are based on ratios known in other geographical areas, especially for species rich families such as Salticidae and Theridiidae. Based on these estimates and counts, the total number of spider species existing in New Zealand is 1662.

In order to propose a potential total number of species, we have calculated a generous margin of error of 20% for each family to account for taxa that are still unknown. This allows a prediction of the total number of species that might be discovered with additional effort in poorly sampled regions and habitats. In some groups, 20% seems high as the fauna has already received reliable taxonomic attention. In other groups, this may be an underestimation of the diversity. However, based on the compiled data and the predictions presented here, the total spider fauna would approximate 1990 species. This is considerably less than the 2500 species predicted by Forster & Forster (1973:67, 1999:3) and the 3600 species of Platnick (1991). All of these three estimates suggest that there is much diversity yet to be discovered and described. For instance, the revision of the Orsolobidae (Forster & Platnick 1985) produced a phenomenal number of species, which was unexpected despite previous studies (Forster 1956). Similar diversity may be discovered in groups such as Huttoniidae and *Uliodon* that are already suspected to be diverse. Continued taxonomic revisions are the only way to properly address these questions.

The high level of endemicity, which is typical of the rest of New Zealand's fauna and flora, coupled with the fact that almost all New Zealand endemic spiders are strictly associated with native forests and other natural habitats (alpine and high elevation habitats, tussock grasslands, seashore, riverbeds, etc.), is remarkable. Correspondingly, introduced species are almost exclusively restricted to disturbed habitats and agricultural areas (Brockerhoff *et al*. 2010). This close association between the endemicity of New Zealand spiders and natural ecosystems reinforces the need for the conservation of the natural estate.

Table 1. The New Zealand spider fauna: counts and predictions

Family	Described species	Known undescribed	Total known	20% undiscovered
Agelenidae	98	6	104	21
Amaurobiidae	35		35	7
Amphinectidae	113	1	114	23
Anapidae	13		13	3
Anyphaenidae	8		8	2
Araneidae	33	1	34	7
Clubionidae	14		14	3
Corinnidae	2		2	
Cyatholipidae	8		8	2
Cycloctenidae	28	2	30	6
Deinopidae	1		1	
Desidae	96		96	19
Dictynidae	9		9	2
Dysderidae	1		1	
Gnaphosidae	24		24	5
Gradungulidae	3		3	1
Hahniidae	27	1	28	6
Hexathelidae	25		25	5
Holarchaeidae	1		1	
Huttoniidae	1	21	22	4
Idiopidae	42	20	62	12
Lamponidae	2		2	
Linyphiidae	136	5	141	28
Lycosidae	27		27	5
Malkaridae		12	12	2
Mecysmaucheniidae	3	13	16	3
Micropholcommatidae	16	10	26	5
Migidae	30		30	6
Mimetidae	2	2	4	1
Miturgidae	3	5	8	2
Mysmenidae		16	16	3
Nemesiidae	10		10	2
Nephilidae	1		1	
Nicodamidae	2		2	
Oecobiidae	1		1	
Oonopidae	1	1	2	
Orsolobidae	106		106	21
Oxyopidae	1		1	
Pararchaeidae	3		3	1
Periegopidae	1	1	2	
Pholcidae	2		2	
Pisauridae	4		4	1
Salticidae	30	159	189	38
Scytodidae	1		1	
Segestriidae	4	11	15	3
Sparassidae	5		5	1
Stiphidiidae	35	1	36	7
Synotaxidae	52	9	61	12
Tengellidae	1		1	
Tetragnathidae	9	9	18	4
Theridiidae	41	161	202	40
Theridiosomatidae		9	9	2
Thomisidae	9	15	24	5
Uloboridae	1		1	
Zodariidae	1		1	
Zoridae	1	5	6	1
Zoropsidae	3	40	43	9
	1126	536	1662	330

Total described	1126
Total known	1662
Predicted total	1992

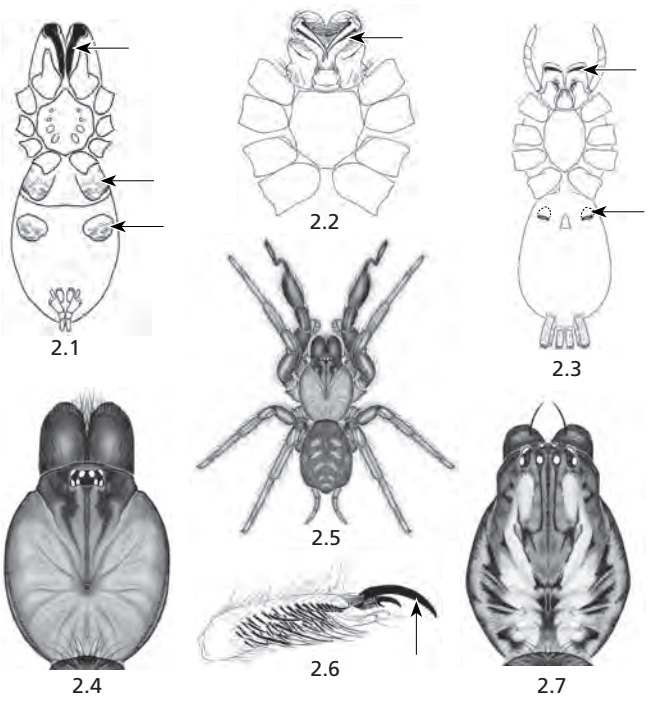
KEY TO SPIDER FAMILIES

Size = body size from the anterior edge of the carapace to the end of the abdomen as viewed dorsally. Minute: < 2 mm, small: 2–6 mm, medium: 6–12 mm, large: 12–24 mm, very large >24 mm. > = greater than; < = less than.

1 Chelicerae paraxial (Fig. 2.1); two pairs of book lungs (Fig. 2.1); eight eyes in a relatively compact group (Fig. 2.4) ..... **MYGALOMORPHAE** ... **2**

— Chelicerae semidiaxial (Fig. 2.2); two pairs of book lungs (Fig. 2.1); retroclaw of legs I and II greatly elongate (Fig. 2.6); eight eyes occupying 2/3 of the cephalon width (Fig. 2.7) ..... **Gradungulidae** (3 spp., p. 29)

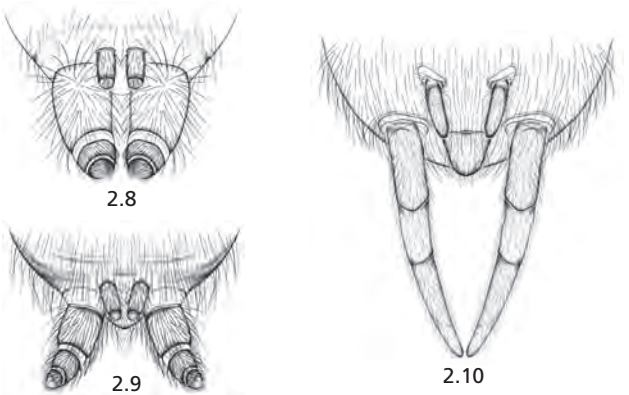
— Chelicerae diaxial (Fig. 2.3); one pair of book lungs (Fig. 2.3) or tracheae only; legs and eyes variable ..... **ARANEOMORPHAE** ... **5**



Mygalomorphae

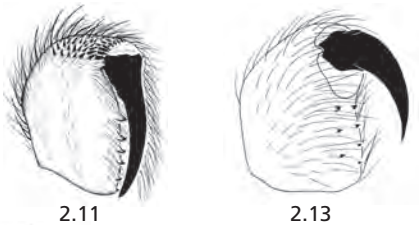
2(1) Four spinnerets: posterior pair of spinnerets short, last segment dome-shaped and shorter than the previous one (Figs 2.8–2.9) **3**

Four or six spinnerets: posterior pair of spinnerets long and slender, **last segment digitiform, sub-**equal or longer than the previous one (Fig. 2.10) **4**



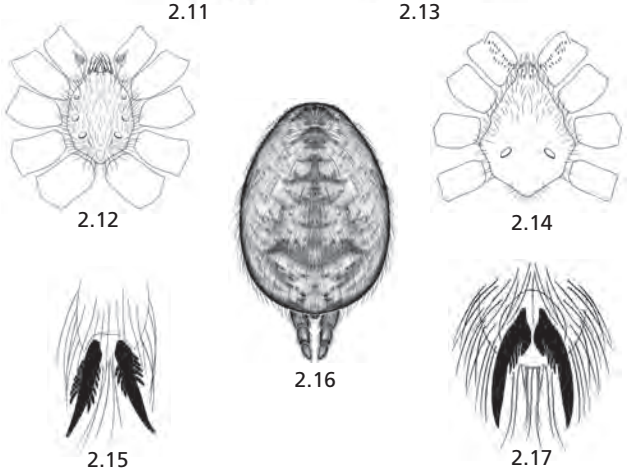
3(2) Chelicerae with rastellum (Fig. 2.11); sternum with six sigilla (Fig. 2.12) ..... **Idiopidae** (42 spp., p. 28)

Chelicerae without rastellum (Fig. 2.13); sternum with two sigilla (Fig. 2.14) ..... **Migidae** (30 spp., p. 27)



4(2) Claws pectinate in a double row (Fig. 2.15); dorsal surface of abdomen usually mottled brown (Fig. 2.16) ..... **Nemesiidae** (10 spp., p. 26)

Claws pectinate in a single row (Fig. 2.17); either four spinnerets and very dark abdomen, or six spinnerets and with a chevron patterned abdomen (Fig. 2.5) ..... **Hexathelidae** (25 spp., p. 25)



Araneomorphae

5(1) Ventral, subapical, sclerotised spot present on at least leg I, and sometimes leg II (Fig. 2.18); male metatarsus I usually with a clasping spur (Fig. 2.19); minute to small (<3 mm) .... **Mysmenidae** (p. 53)

— Sclerotised spot absent; no clasping spur on metatarsus I; size variable **6**

6(1) Tarsi shorter than metatarsi (Fig. 2.20), size variable 7

— Tarsi longer than metatarsi in at least one pair of legs (Fig. 2.21); minute to small (<3 mm) **77**

7(6) Cribellum present (Fig. 2.22); metatarsus IV with a calamistrum (Fig. 2.24) **8**

— Cribellum (Fig. 2.23) and calamistrum absent **12**

8(7) Anal tubercle very large, with a fringe of long seta (Fig. 2.25) ..... **Oecobiidae** (1 sp., p. 38)

— Anal tubercle not as above **9**

9(8) Chelicerae without boss (Fig. 2.26) **10**

— Chelicerae with boss (Fig. 2.27) **11**

10(9) Femora of legs II, III and IV with long trichobothria (Fig. 2.28); male palp without tibial apophysis (Fig. 2.29); small (3–5 mm) .... **Uloboridae** (1 sp., p. 47)

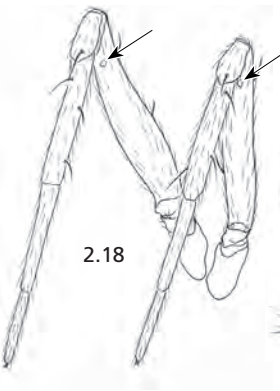
— Femora of legs II, III and IV without trichobothria; male palp with dorsal tibial apophysis (Fig. 2.30); medium-sized spiders (8–12 mm) .... **Nicodamidae** (2 spp., p. 63)

11(9) Spines absent on legs; male chelicerae with a marked indentation on the inner margin (Fig. 2.31) ..... **Dictynidae** (9 spp., p. 64)

— Spines present on legs (Fig. 2.32); male chelicerae not indented (Fig. 2.33) **43**

12(7) Endites triangular directed across the labium (Fig. 2.34); legs with thin prolateral scopulae of spatulate setae on tarsi and metatarsi I and II (Fig. 2.35) ..... **Huttoniidae** (1 sp, p. 41)

— Endites not as above; legs without prolateral scopulae of spatulate setae **13**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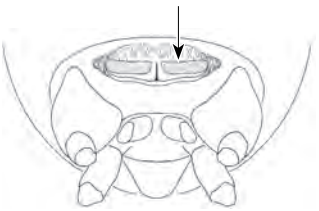
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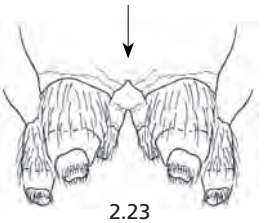
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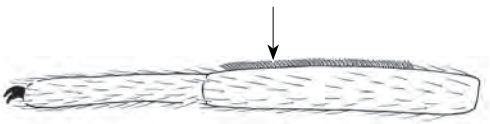
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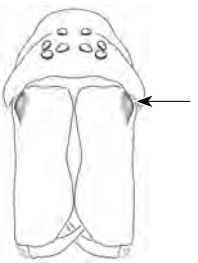
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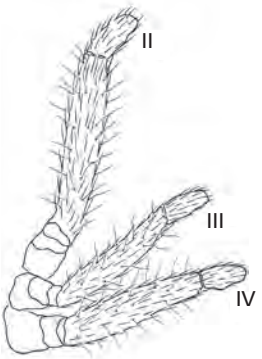

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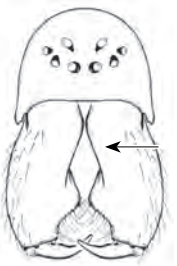
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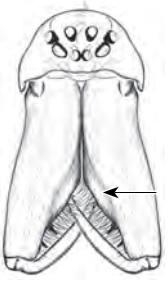
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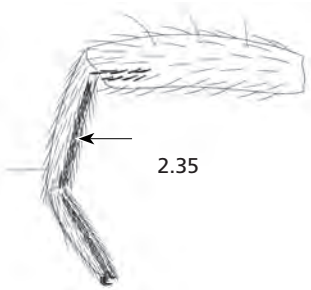
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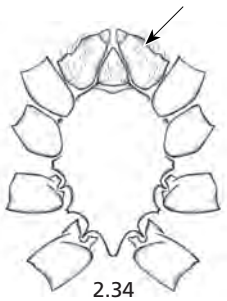
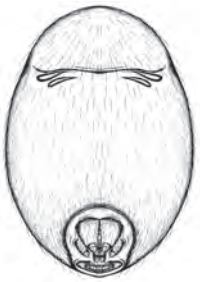

2.34

13(12) Eyes absent; epigynum absent; male palpal organ simple. Troglobite, extremely rare .... *Anopsolobus subterraneus* ..... **Orsolobidae**, *in part* (1/106 spp., p. 33)

— **Haplogyne.** Six eyes of regular size; epigynum absent (Fig. 2.36); male palpal organ simple (Fig. 2.37) **14**

— Six highly reduced eyes (AME lost); epigynum present; male palpal organ complex. Troglobite, extremely rare .... undescribed genus and species ..... **Amaurobiidae**, *in part* (p. 87)

— **Entelegyne.** Eight eyes (but see *Auhunga pectinata*, p. 87); epigynum present (Fig. 2.38); male palpal organ complex (Fig. 2.39) **19**



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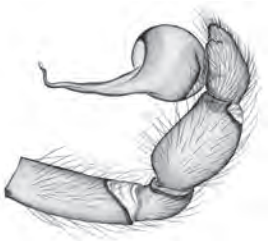

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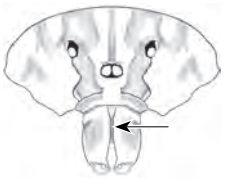
Six eyes

14(13) Carapace strongly convex (Fig. 2.40); chelicerae fused at base (connected by a membrane) (Fig. 2.41) ..... **Scytodidae** (1 sp., p. 36)

— Carapace otherwise; chelicerae free **15**

2.40



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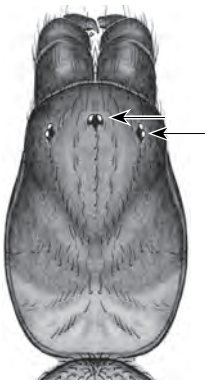
15(14) Eyes in three widely spaced diads (Fig. 2.42) .... **Periegopidae** (1 sp., p. 37)

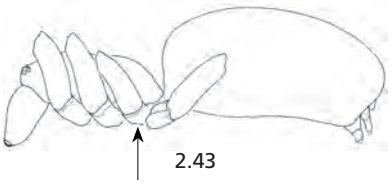
— Eyes not as above **16**



2.42

16(15) Legs I, II and III directed forward (Fig. 2.43); three claws (Fig. 2.44) ..... **Segestriidae** (4 spp, p. 30)

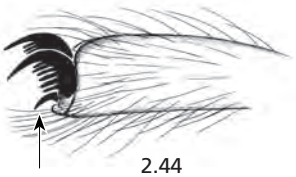
— Leg III directed backwards; two claws (Fig. 2.45) **17**



2.43

17(16) Eye region occupying about 1/3 of the cephalon width (Fig. 2.46); large spider (12–15 mm) .... **Dysderidae** (1 sp., p. 31)

— Eye region occupying more than 2/3 of the cephalon width (Fig. 2.47); small spider (0.8–7.0 mm) **18**

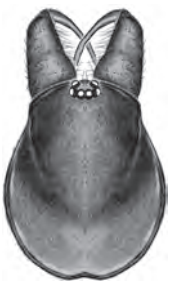


2.44

2.45

18(17) Adults usually with pigmentation and abdominal pattern (Fig. 2.48); tarsal organ elevated (best seen with SEM) (Fig. 2.49); tarsal claw pectinations often on an enlarged base (Fig. 2.45); size variable (1–7 mm); common .... **Orsolobidae,** *in part* (105/106 spp., p. 33)

— Adults rather unpigmented and without abdominal pattern (Fig. 2.47); tarsal organ not elevated; tarsal claw pectinations not on an enlarged base; minute spider (0.8 mm); extremely rare .... **Oonopidae** (1 sp., p. 32)



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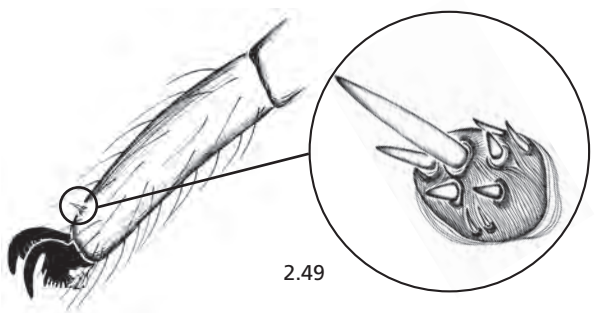

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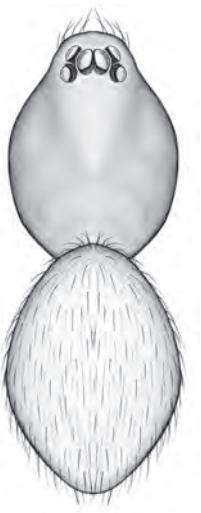


2.47

Eight eyes

19(13) Legs with two claws (Fig. 2.51), usually with claw tufts (Fig. 2.51) **20**

— Legs with three claws (Fig. 2.52) **31**

20(19) Eight eyes arranged in three rows (Fig. 2.53–2.54) **21**

— Eight eyes arranged in two rows (Fig. 2.58, 2.61) **23**

21(20) Eyes 4.2.2 (Fig. 2.53); AME largest, directed forwards (Fig. 2.53) ..... **Salticidae** (30 spp., p. 72)

— Eyes 2.4.2 (Fig. 2.54); without large AME (Fig. 2.54) **22**

22(21) Setal tufts present near the eye region (Fig. 2.54) and along margin of posterior portion of abdominal band ..... **Zoridae** (1 sp., p. 71)

— Setal tufts lacking. Rare species, male unknown; female genitalia as in Fig. 2.55; known only from the South Island (Cardrona Valley) .... *Zealoctenus cardronaensis* ..... **Miturgidae,** *in part* (1/3 spp., p. 89)

23(20) Colulus present (Fig. 2.56) **24**

— Colulus absent (Fig. 2.57) **26**

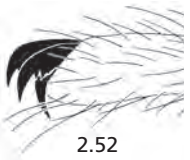
24(23) Eyes in a compact group, posterior row strongly recurved (Figs 2.58, 2.60); females with median spinnerets with 3, and posterior spinnerets with 2, large cylindrical spigots (Fig. 2.59); *Supunna picta* with conspicuous black and white colour pattern on abdomen and cephalothorax (Fig. 2.60) .... **Corinnidae** (2 spp., p. 70)

— Eyes in two more or less straight rows slightly procurved at most (Fig. 2.61); females without such spigots; colouration not as above **25**

25(24) Trochanters with a shallow notch (Fig. 2.62); tarsal claw tufts without lamelliform setae; chelicerae barely projecting forward, less than a 1/3 of total length of the cephalothorax **(Fig. 2.61); male cymbium** with a dorsal scopula (Fig. 2.65) .... **Zoropsidae** (3 spp., p. 92)

— Trochanters not notched (Fig. 2.64); tarsal claw tufts present and composed of several rows of lamelliform setae (Fig. 2.63); chelicerae stout and porrect, projecting forward about 1/3 to 1/2 of the total length of the cephalothorax (Fig. 2.66); male cymbium without dorsal scopula .... **Anyphaenidae** (8 spp., p. 68)

2.51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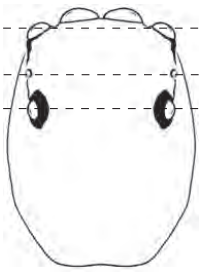
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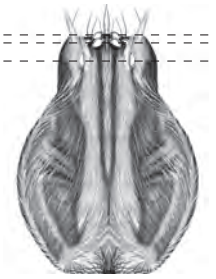
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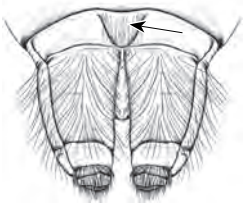
after Forster & Wilton 1973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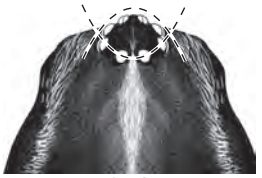
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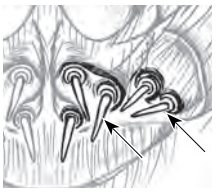
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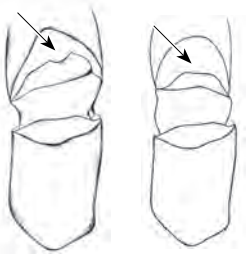
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26(23) Legs in prograde position (Fig. 2.67) **27**

— Legs in laterigrade position (Fig. 2.68) **30**

— Legs in laterigrade position (**Fig. 2.66) AND genitalias** as in Figs 2.69–2.70 .... *Hemicloea rogenhoferi* ..... **Gnaphosidae**, *in part* (1/24 spp., p. 76)

27(26) Anterior pair of spinnerets large, separated at their base by a distance about equal to the diameter of one spinneret (Fig. 2.71); endites with an oblique depression (Fig. 2.72) **28**

— Anterior pair of spinnerets contiguous or nearly so (Fig. 2.73); endites without such a depression **29**

28(27) AME almost twice as large as ALE (Fig. 2.74); presence of a distinctive tuft of white setae at the apex of the abdomen (Fig. 2.67); presence of a pair of invaginated ventral sclerites behind the epigastric furrow (Fig. 2.75); endites with a distinct groove on the median margin (Fig. 2.76) .... **Lamponidae** (2 spp., p. 75)

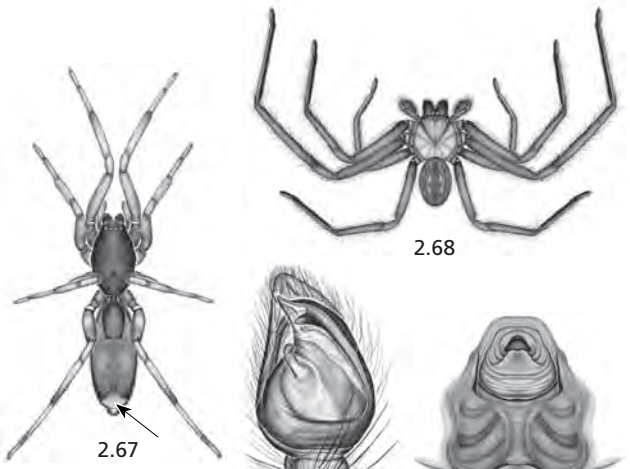
— AME smaller or subequal to ALE (Fig. 2.77) or less than twice as large as ALE (*Hypodrassodes*); no white mark at the apex of the abdomen; no invaginated ventral sclerites behind the epigastric furrow; endites without a distinct groove on the median margin (Fig. 2.72) .... **Gnaphosidae,** *in part* (23/24 spp., p. 76)

29(27) Carapace without fovea (Fig. 2.78); male palpal cymbium with a basal projection (Fig. 2.80); genitalia as in Figs 2.80–2.82 .... *Cheiracanthium stratioticum* ..... **Miturgidae,** *in part* (1/3 spp., p. 89)

— Carapace with fovea (Fig. 2.79); male palpal cymbium without a basal projection .... **Clubionidae** (14 spp., p. 69)

30(26) Very large spiders (30–40 mm); chelicerae with boss (Fig. 2.83); legs with scopulae (Fig. 2.85); metatarsus with a membranous trilobed dorso-apical extension (Fig. 2.86) .... **Sparassidae** (5 spp., p. 67)

— Medium to small spiders (4–12 mm); chelicerae without a boss **(Fig. 2.84); legs without scopu**lae; metatarsus without a membranous trilobed dorso-apical extension .... **Thomisidae** (9 spp., p. 74)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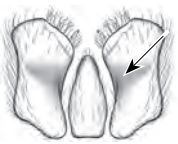
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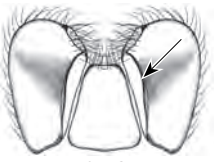
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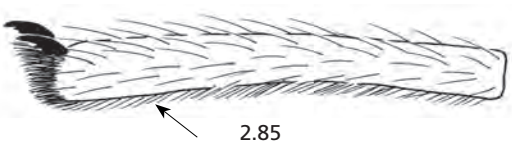
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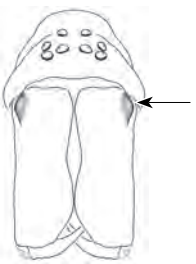
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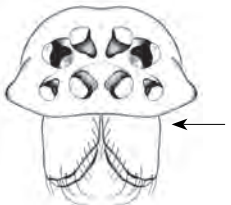

2.84

31(19) Rare species, male unknown. Female genitalia as in Fig. 2.87; known only from Bounty Islands .... *Pacificana cockayni* ..... **Miturgidae**, *in part* (1/3 spp., p. 89)

— Not as above **32**

32(31) Eight eyes arranged in two triads + AME (Fig. 2.88); chelicerae fused at the base; (Fig. 2.89) legs long and slender (Fig. 2.90) .... **Pholcidae** (2 spp., p. 35)

— Not as above **33**

33(32) Tarsi with trichobothria (Fig. 2.91) **34**

— Tarsi without trichobothria **64**

34(33) Eyegroup hexagonal, with anterior row strongly procurved and posterior row strongly recurved (Fig. 2.92); clypeus very high (Fig. 2.92); legs with long spines on tibiae and metatarsi (Fig. 2.93) .... **Oxyopidae** (1 sp., p. 93)

— Eyegroup not hexagonal, or, if close to that arrangement, then clypeus not as high **35**

35(34) Six spinnerets arranged in a transverse row (Fig. 2.94) ..... **Hahniidae** (27 spp., p. 65)

— Spinnerets not as above **36**

36(35) Posterior median eyes (PME) huge, several times the diameter of the other eyes (Fig. 2.95) .... **Deinopidae** (1 sp., p. 46)

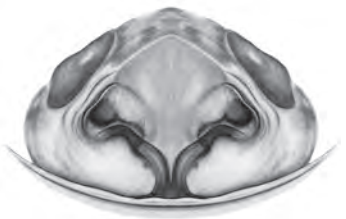
— Posterior median eyes (PME) not so enlarged **37**

37(36) Eight eyes in two strongly recurved rows (Figs 2.96–2.97); posterior eyes usually much larger than anterior eyes (Figs 2.96–2.97); ALE smaller than AME and placed behind the level of the AME adjacent to the PLE (Fig. 2.98) **38**

— Eyes not as above **40**

38(37) Small, flattened laterigrade; genitalia as in Figs 2.99–2.100 ..... *Uzakia unica* ..... **Cycloctenidae,** *in part* (1/28 sp., p. 90)

— Not as above **39**



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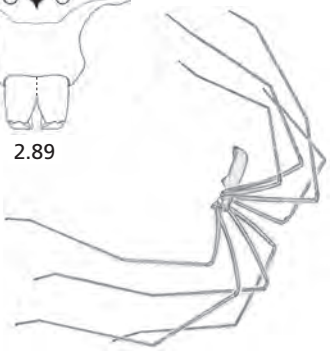

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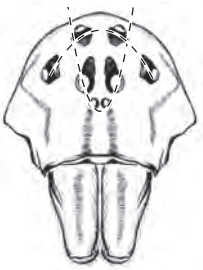

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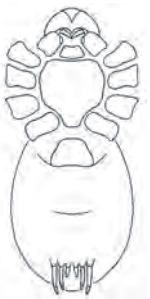

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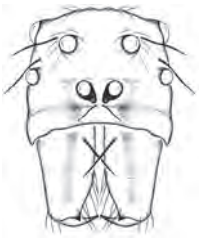

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after Forster & Wilton 1973

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after Forster & Wilton 1973

39(38) Chelicerae without boss (Fig. 2.101); smaller than 4.0 mm (except *Toxopsoides huttoni* ♀ = 4.0 mm) .... Toxopinae, **Desidae,** *in part* (19/96 spp., p. 82)

— Chelicerae with boss (Fig. 2.102, best seen dissected); larger than 4.0 mm (except *Toxopsiella perplexa* ♂ = 3.7 mm) .... **Cyclocteni dae,** *in part* (27/28 spp., p. 90)

40(37) Anterior spinnerets long, other spinnerets reduced (Fig. 2.103); eye rows procurved (Fig. 2.104); clypeus high (Fig. 2.105) ..... **Zodariidae** (1 sp., p. 66)

— Spinnerets not as above; eyes in a different arrangement; clypeus not as distinctively high **41**

41(40) All trochanters with a notch on the distal edge of the ventral side (Fig. 2.106); posterior row of eyes recurved (Figs 2.107–2.108); colulus absent **42**

— Trochanters not notched; if notched, posterior row of eyes not recurved; colulus present (Fig. 2.109) **43**

42(41) Posterior row of eyes strongly recurved, appearing to form two rows (Figs 2.108, 2.110); tibia of male palp without apophysis .... **Lycosidae** (27 spp., p. 95)

— Posterior row of eyes recurved but forming a single row (Fig. 2.107); tibia of male palp with apophysis (Fig. 2.111) ..... **Pisauridae** (4 spp., p. 94)

43(11&41) Ventral surface of tibiae and metatarsi of legs I and II with numerous setae in two rows (Fig 2.112); male and female genitalia as in Figs 2.113–2.114 . ..... **Tengellidae** (1 sp., p. 88)

— Legs I and II not as above, genitalia different **44**

44(43) Trichobothria in a double row on tibia and in a single row on metatarsi and tarsi (Fig. 2.115); male palp with the distal portion of the cymbium extending well beyond the bulb (Fig. 2.116, except for *Stiphidion facetum* shown in Fig. 2.117) .... **Stiphidiidae** (35 spp,. p. 78)

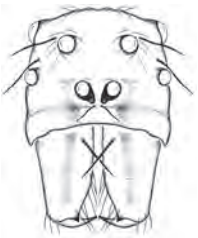
— Trichobothrial arrangement different; cymbium shorter **45**

45(44) Tarsi of female palp and cymbium of male palp without trichobothria **46**

— Tarsi of female palp (Fig. 2.118) and cymbium of male palp with trichobothria **48**

46(45) Posterior spinnerets with numerous large spigots (Fig. 2.119) ..... *Aorangia* ..... **Amphinectidae,** *in part* (16/113 spp., p. 85)

— Posterior spinnerets not as above **47**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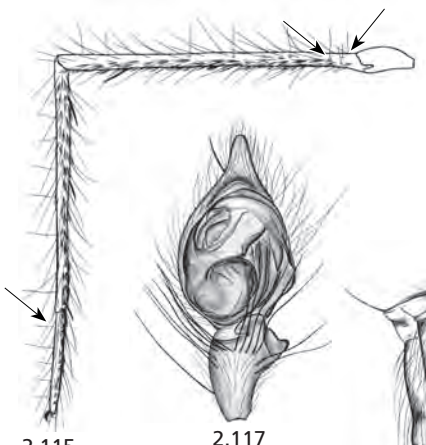
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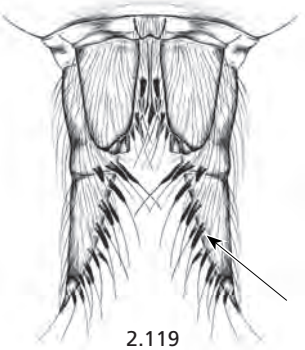

2.119

47(46) Male palp with embolus forming a distinctive 90° angle in the terminal portion (Fig. 2.120); epigynum with a simple circular atrium as in Fig. 2.121 ..... *Neolana* ..... **Amphinectidae,** *in part* (3/113 spp., p. 85)

— Not as above ..... **Agelenidae** (98 spp., p. 80)

48(45) Male palp with an S-shaped embolus as Figs 2.122–2.123; female epigynum as Figs 2.124–2.125 ..... *Badumna* ..... **Desidae,** *in part* (2/96 spp., p. 82)

— Genitalia not as above **49**

49(48) Female **50**

— Male **51**

50(49) Epigynum lightly sclerotised .... **Desidae,** *in part* (75/96 spp., p. 82)

— Epigynum well-sclerotised .... **Amaurobiidae** (35 spp., p. 87) .....or **Amphinectidae** (94/113 spp., p. 85)

51(49) Cribellum present (Figs 2.126–2.127) **52**

— Cribellum absent (Fig. 2.128) **54**

52(51) Cribellum entire (Fig 2.127) .... *Matachia, Notomatachia, Nuisiana, Panoa* ..... **Desidae,** *in part* (14/96 spp., p. 82)

— Cribellum divided (Fig. 2.126) **53**

53(52) Male palp with a short embolus (Fig. 2.129) .... *Waitetola huttoni* ..... **Amaurobiidae,** *in part* (1/35 spp., p. 87)

— Male palp with a filiform embolus embedded in a translucent conductor (Fig. 2.130) ..... *Hulua* ..... **Desidae,** *in part* (4/96 spp., p. 82)

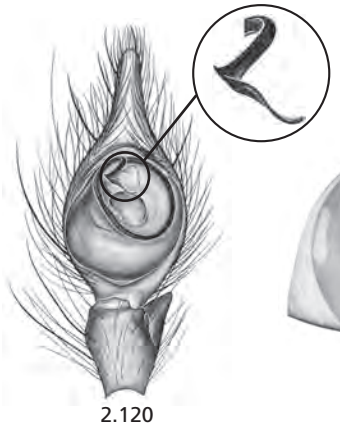
— Male palp with elongate and visible free embolus, various shapes (Fig. 2.131) .... *Akatorea, Dunstanoides, Makora, Maniho, Marplesia, Oparara, Rangitata, Reinga, Rorea, Waterea* .... **Amphinectidae,** *in part* (39/113 spp., p. 85)

54(51) Median apophysis of male palp hook-shaped (Figs 2.132–2.133) **55**

— Median apophysis of male palp absent, or not shaped as above **56**

55(51) Embolus totally or mostly concealed in a translucent conductor (Fig. 2.132) .... **Desidae,** *in part* (24/96 spp., p. 82)

— Embolus long and conspicuous, easily visible (Fig. 2.133) ..... *Amphinecta, Huara, Neororea* ..... **Amphinectidae,** *in part* (25/113 spp., p. 85)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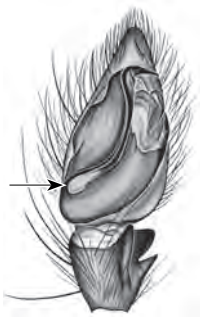
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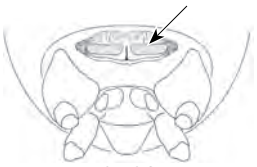
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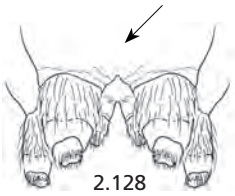
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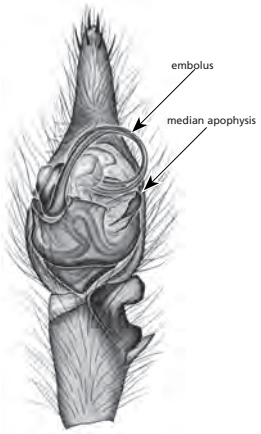

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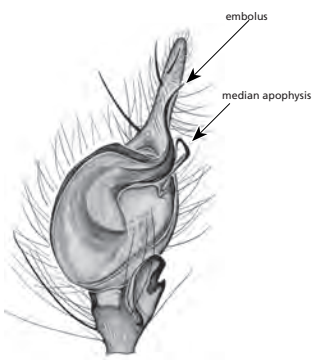

2.132

56(54) Eight eyes **57**

— Six eyes ..... *Auhunga pectinata* ..... **Amaurobiidae,** *in part* (1/35 sp., p. 87)

57(56) Eyes vestigial and reduced to small eye spots; troglobitic spider ..... *Maloides cavernicola* ..... **Amaurobiidae,** *in part* (1/35 sp., p. 87)

— Eyes not reduced **58**

58(57) Eight eyes in two straight rows (Fig. 2.134) **59**

— Eyes rows either strongly procurved (Fig. 2.135), strongly recurved, or AME extremely small .... *Lamina, Myro, Neomyro* ..... **Desidae,** *in part* (8/96 spp., p. 82)

59(58) Chelicerae semi-porrect (Fig. 2.136) .... *Gasparia* ..... **Desidae,** *in part* (22/96 spp., p. 82)

— Chelicerae not porrect **60**

60(59) Male palp as in Fig. 2.137; littoral habitat .... *Otagoa* ..... **Desidae,** *in part* (3/96 spp., p. 82)

— Male palp different; variety of habitats **61**

61(60) Male palp with a strongly developed tibial process with one or two prongs (Fig. 2.138) .... *Paramamoea* ..... **Amphinectidae,** *in part* (10/113 spp., p. 85)

— Male palp without such apophysis **62**

62(61) Tarsal organ replaced by a translucent prong (Fig. 2.139) ..... *Otira* ..... **Amaurobiidae,** *in part* (6/35 spp., p. 87)

— Tarsal organ normal **63**

63(62) Embolus of male palp long, filiform and easily visible (Fig. 2.140) ..... *Holomamoea, Mamoea* ..... **Amphinectidae,** *in part* (20/113 spp., p. 85)

— Embolus of male palp concealed (Fig. 2.141) .... *Pakeha, Muritaia, Paravoca, Poaka* ..... **Amaurobiidae,** *in part* (26/35 spp., p. 87)

64(33) Tibia and metatarsus of legs I and II with a row of long spines on the prolateral surface, with shorter curved spines in the intervals (Fig. 2.142) **65**

— Legs without this arrangement of spines **66**

65(64) Carapace and sternum alveolate (Fig. 2.143) .... **Malkaridae** (p. 40)

— Carapace and sternum not alveolate (Fig. 2.144) . ..... **Mimetidae** (2 spp., p. 39)

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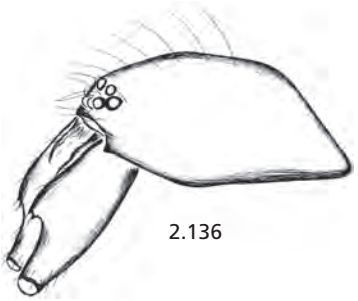
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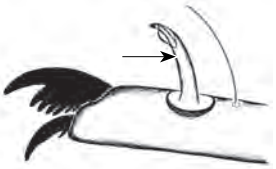
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after Forster & Wilton 1973

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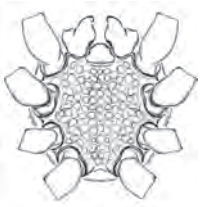
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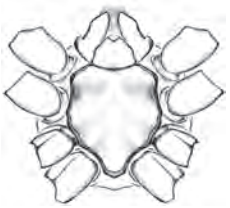
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66(64) Chelicerae inserted well above the mouth so that there is a pronounced space between the maxillae and the insertion of the chelicerae (Figs 2.145, 2.147–2.149) **67**

— Chelicerae inserted at the same level as the legs **69**

67(66&77) ALS well-developed, other spinnerets absent or highly reduced, giving the impression that only two spinnerets are present (Fig. 2.146) .... **Mecysmaucheniidae** (3 spp., p. 45)

— Six well-developed spinnerets **68**

68(62) Abdomen spherical (Fig. 2.147); chelicerae thin and elongated (Figs 2.147–2.148); clypeus swollen (Figs 2.147–2.148) .... **Holarchaeidae** (1 sp., p. 43)

— Abdomen broadly oval (Fig. 2.149); chelicerae robust (Fig. 2.149); clypeus not swollen (Fig. 2.149) ..... **Pararchaeidae** (3 spp., p. 44)

69(66) Sternum broadly truncate with a pair of anterior sternal pits (Fig. 2.150); presence of a long dorsal trichobothria on tibia III and IV (Fig. 2.151); female palp without claw; tiny to small size (1–4 mm) spiders ..... **Theridiosomatidae** (p. 52)

— Sternum without a pair of anterior sternal pits; no long dorsal trichobothria on tibia III and IV; female palp with claw; size variable **70**

70(69) Legs without spines and femora basally thickened (Fig. 2.152); males with dorsal macrosetae on the palpal femur, patella and/or tibia (Fig. 2.153) .... **Synotaxidae** (52 spp., p. 59)

— Legs not as above; males without dorsal macrosetae **71**

71(70) Labium not rebordered (Fig. 2.154); comb of serrated setae on tarsi IV (Fig. 2.156) (with some exceptions) ..... **Theridiidae** (41 spp., p. 61)

— Labium rebordered (Fig. 2.155); no comb of serrated setae on tarsi IV **72**

72(71) Tracheal spiracle wide (Fig. 2.157); lateral eyes on tubercles (Fig. 2.158); paracymbium rudimentary; male palp with a retro-median cymbial process (Fig. 2.159) ..... **Cyatholipidae** (8 spp., p. 58)

— Tracheal spiracle narrow; lateral eyes not on tubercles; paracymbium fused to cymbium or a separate sclerite attach by a membrane (Fig. 2.160) **73**

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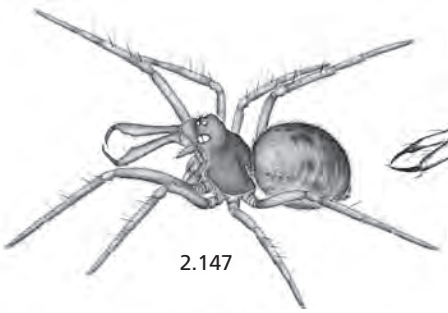
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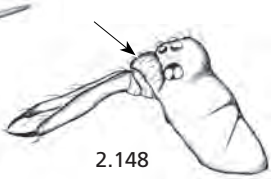
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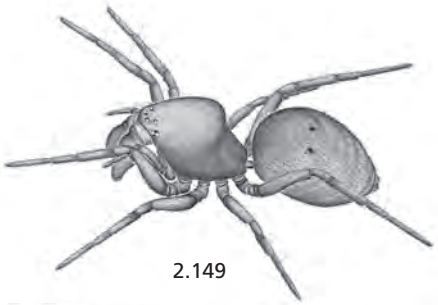
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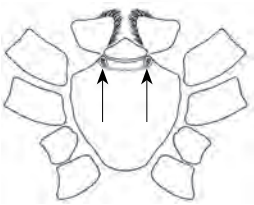
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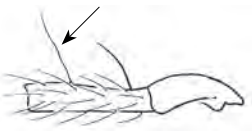
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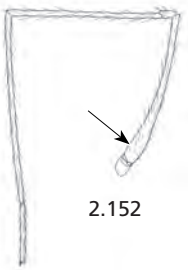
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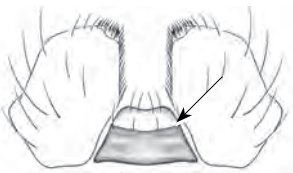
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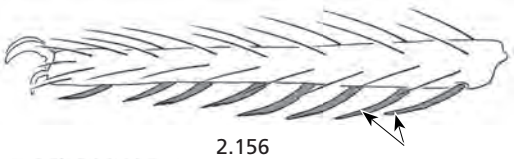
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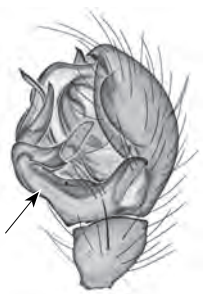
2.160

73(72) Minute to medium-sized spiders; trichobothria on femur absent; chelicerae often with stridulatory files; paracymbium a separate sclerite attached by a membrane (Fig. 2.161); female epigynum variable; Mynogleninae with distinctive clypeal sulci (Fig. 2.162) ..... **Linyphiidae** (136 spp., p. 55)

— Not as above **74**

74(73) Female of large size (> 20 mm); male palp embolic conductor 2–3 times the length of the cymbium (Fig. 2.163) ..... **Nephilidae** (1 sp., p. 51)

— Not as above **75**

75(74) Chelicerae enlarged (Figs 2.164–2.165); abdomen cylindrical or tapered (Fig. 2.164) .... *Tetragnatha* .....**Tetragnathidae,** *in part* (4/9 spp., p. 52)

— Chelicerae not enlarged; abdomen globular or oval (Fig. 2.166) **76**

76(75) Male palp without median apophysis (Fig. 2.167); epigynum rather flat (Fig. 2.168) ..... *Eryciniolia, Leucauge, Meta, Nanometa, Orsinome* ..... **Tetragnathidae,** *in part* (5/9 spp., p. 50)

— Male palp with median apophysis (Fig. 2.169); epigynum usually with a distinct scape (Fig. 2.170) ..... **Araneidae** (33 spp., p. 48)

77(6) Chelicerae inserted well above the mouth so that there is a pronounced space between the maxillae and the insertion of the chelicerae (Fig. 2.171) **67**

— Chelicerae inserted at the same level as the legs **78**

78(77) Legs I and II longer than other legs (Fig. 2.172); sternum heavily punctuated (Fig. 2.173); eyes round (Fig. 2.172); absence of evaginated tegular ridge on male pedipalp .... **Anapidae** (13 spp., p. 54)

— Legs I and IV subequal (Fig. 2.174); sternum smooth or lighly punctuated (except *Taphiassa punctata*); eyes ovoid (Fig. 2.174) (except *Taphiassa punctata*); presence of an evaginated tegular ridge on male pedipalp (Fig. 2.175) .... **Micropholcommatidae** (16 spp., p. 42)

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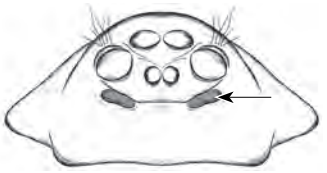
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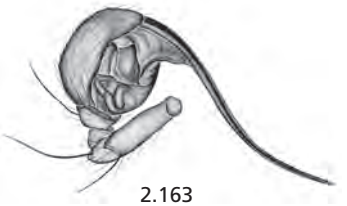
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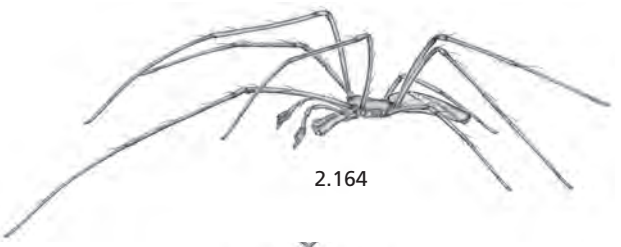
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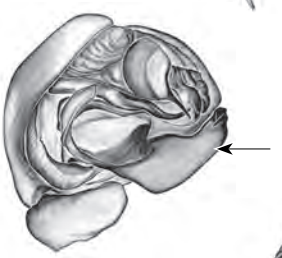
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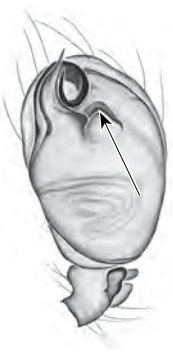
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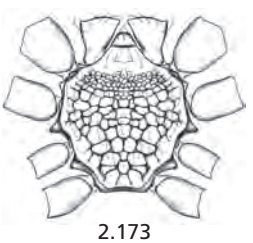

2.173

Hexathelidae

Diversity

2 genera, 25 species.

Summary description

Medium to very large mygalomorphs (11–25 mm), 3 claws, 8 eyes, rastellum absent.

Diagnosis

Sternum with 6 sigilla; superior claws pectinate in a single row (Fig. 3.2); posterior spinnerets much longer than anterior spinnerets (Fig. 3.3); tibia I of males incrassate (Fig. 3.1).

Similar families

Nemesiidae have claws pectinated in a double row (single row in Hexathelidae). **Migidae** and **Idiopidae** have shorter posterior spinnerets (posterior spinnerets much longer in Hexathelidae).

Taxonomy notes

Forster (1968) reviewed the family, but given the restricted distribution of many species, the discovery of additional species in geographically isolated areas seems likely. The males of *Porrhothele quadrigyna, Hexathele cantuaria, H. cavernicola, H. huka, H. maitaia, H. pukea, H. putuna, H. rupicola, H. waipa* and *H. waita* are unknown.

Key references

Forster 1968, Court 1982, 1984.

Endemicity, habitat and distribution

Hexathele and *Porrhothele* are endemic genera. The majority of hexathelids build bulky silken tunnels, utilising a variety of natural cavities such as crevices, spaces under stones or hollows in trees and logs. Several species dig burrows instead (Forster & Forster 1999). These spiders are found in forests but *Hexathele petriei* occurs in dry open country. *Hexathele rupicola* lives on river beds and shows no inclination to burrow; it makes a typical silken tube amongst stones that accumulate on the banks (Forster & Forster 1999). Except for *Porrhothele antipodiana,* which is widespread on both main islands and common around houses, most species seem to have restricted ranges.

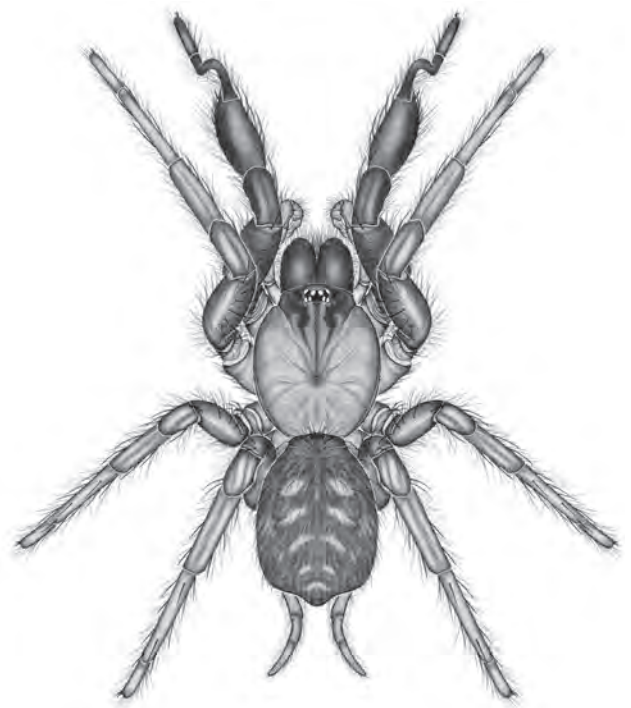
Classification and nomenclature note

Previously placed in Dipluridae (Forster 1968).

Species list

HEXATHELIDAE Simon 1892a:188

Hexathelinae Simon 1892a:176
- *Hexathele* Ausserer 1871a:172
  - *Hexathele cantuaria* Forster 1968:158
  - *Hexathele cavernicola* Forster 1968:150
  - *Hexathele exemplar* Parrott 1960:200
  - **Hexathele hochstetteri* Ausserer 1871a:172
  - *Hexathele huka* Forster 1968:151
  - *Hexathele huttoni* Hogg 1908:337
  - *Hexathele kohua* Forster 1968:141
  - *Hexathele maitaia* Forster 1968:154
  - *Hexathele nigra* Forster 1968:156
  - *Hexathele otira* Forster 1968:155
  - *Hexathele para* Forster 1968:143
  - *Hexathele petriei* Goyen 1887:207
  - *Hexathele pukea* Forster 1968:148
  - *Hexathele putuna* Forster 1968:150
  - *Hexathele ramsayi* Forster 1968:157
  - *Hexathele rupicola* Forster 1968:164
  - *Hexathele taumara* Forster 1968:152
  - *Hexathele waipa* Forster 1968:159
  - *Hexathele waita* Forster 1968:152
  - *Hexathele wiltoni* Forster 1968:145

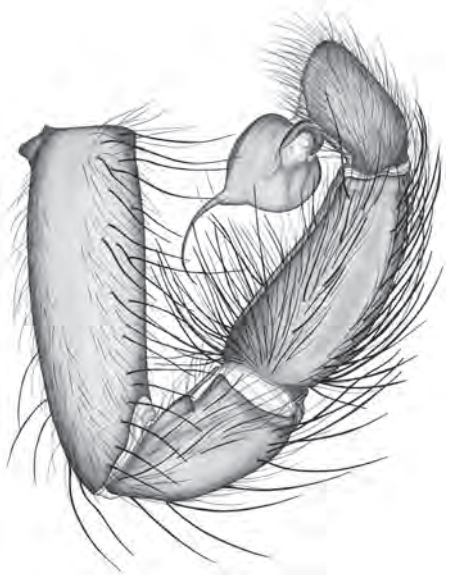


3.1 *Porrhothele antipodiana* (Walckenaer 1837)

Macrothelinae Simon 1892a:176
- *Porrhothele* Simon 1892a:185
  - **Porrhothele antipodiana* (Walckenaer 1837:230) **Figs 3.1, 4**
  - *Porrhothele blanda* Forster 1968:178
  - *Porrhothele moana* Forster 1968:173
  - *Porrhothele modesta* Forster 1968:175
  - *Porrhothele quadrigyna* Forster 1968:179

3.2

3.3



3.4

Nemesiidae

Diversity

1 genus, 10 species.

Summary description

Medium to large mygalomorphs (6.2–20.0 mm), 3 claws, 8 eyes.

Diagnosis

Chelicerae without rastellum; claws pectinate in a double row (Fig. 4.2); 4 spinnerets; posterior spinnerets long (Fig. 4.3).

Similar families

Hexathelidae have claws pectinated in a single row (double row in Nemesiidae). **Idiopidae** and **Migidae** have shorter posterior spinnerets (posterior spinnerets much longer in Nemesiidae).

Taxonomic note

Given the limited distribution of most species, the discovery of additional species in geographically isolated areas is likely.

Key reference

Forster 1968.

Endemicity, habitat and distribution

The genus *Stanwellia* is endemic to New Zealand and Australia. Nemesiidae inhabit silken tubes in burrows in the ground and under stones and logs. These spiders are found all over New Zealand, but species' ranges seem restricted. Males of *Stanwellia hapua*, *S. hollowayi*, *S. houhora*, *S. media*, *S. puna*, *S. taranga* and the female of *S. tuna* are unknown.

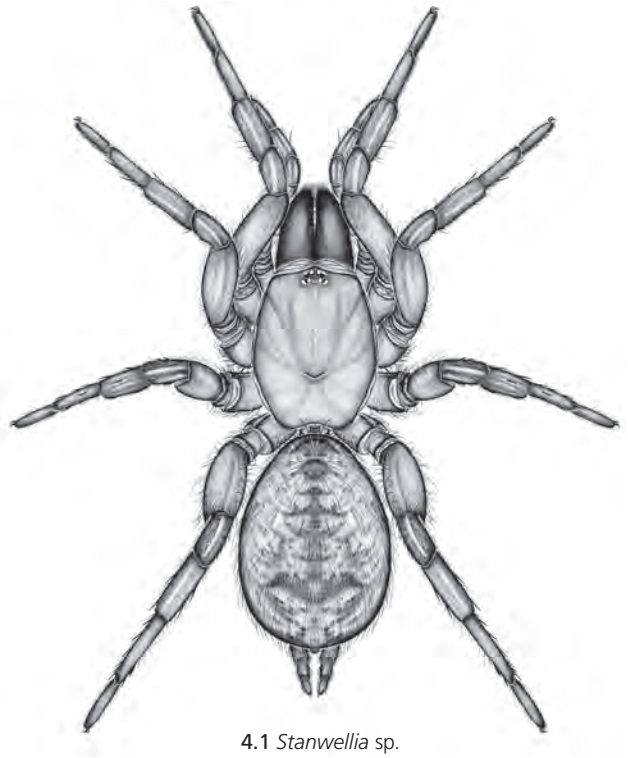
Classification and nomenclature notes

These species were originally described in the genus *Aparua* and placed in Dipluridae by Forster (1968). Raven (1985a) transferred them to Nemesiidae.

Species list

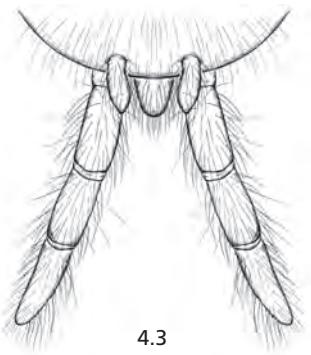
NEMESIIDAE Simon 1889m:179
- *Stanwellia* Rainbow & Pulleine 1918:164
  - *Stanwellia bipectinata* (Todd 1945:390)
  - *Stanwellia hapua* (Forster 1968:135)
  - *Stanwellia hollowayi* (Forster 1968:134)
  - *Stanwellia houhora* (Forster 1968:360)
  - *Stanwellia kaituna* (Forster 1968:129) **Fig. 4.4**
  - *Stanwellia media* (Forster 1968:133)
  - *Stanwellia puna* (Forster 1968:134)
  - *Stanwellia regia* (Forster 1968:136)
  - *Stanwellia taranga* (Forster 1968:131)
  - *Stanwellia tuna* (Forster 1968:131)

Undetermined / undescribed taxa
- *Stanwellia* sp. **Fig. 4.1**

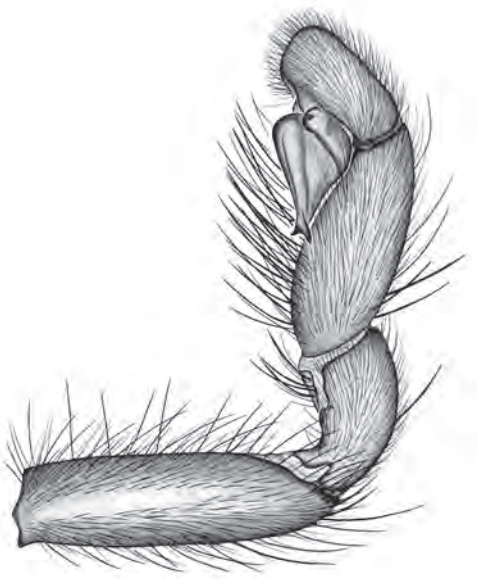


4.1 *Stanwellia* sp.

4.2



4.3



4.4

Migidae

Diversity

1 genus, 30 species.

Summary description

Medium-sized mygalomorphs (7.5–12.5 mm), 3 claws, 8 eyes.

Diagnosis

Four spinnerets (Fig. 5.2); chelicerae without rastellum (Fig. 5.3); sternum with 2 sigilla (Fig. 5.4); eye region covering a greater portion of carapace width than other mygalomorph families (Fig. 5.1).

Similar families

Idiopidae have a rastellum (absent in Migidae); sternum with 6 sigilla (2 sigilla in Migidae). **Nemesiidae** and **Hexathelidae** have long posterior spinnerets (shorter posterior spinnerets in Migidae).

Taxonomic notes

The genus was revised by Wilton (1968). Given the limited distribution of most species, the discovery of additional species in geographically isolated areas is likely. Wilton (1968) stated that the species form four species groups. Males are known for only five species.

Key references

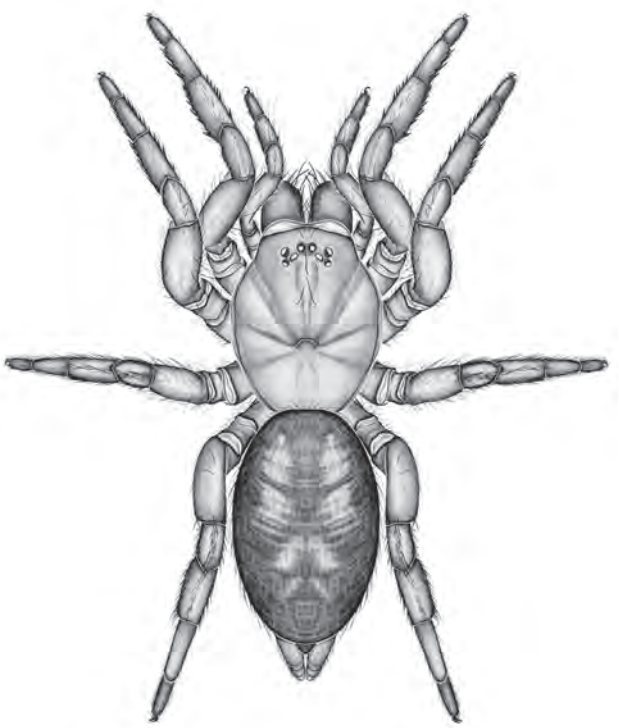
Wilton 1968, Griswold & Ledford 2001.

Endemicity, habitat and distribution

Migas is known from New Caledonia, New Zealand and Australia (Griswold & Ledford 2001). These spiders construct unbranched trap-door nests made of a flattened silken tube with a hinged lid. The surfaces are camouflaged and strengthened with material gathered from the surrounding terrain. The nests may be found on tree trunks, in moss on banks, under stones, in crevices or angles on rock faces or in burrows of sand or clay banks (Wilton 1968). The genus is found throughout New Zealand but appears to be more diverse in the South Island. Species appear to have limited ranges.

Species list

MIGIDAE:Simon 1889m:178
Miginae: Petrunkevitch 1928a:31
Migas L. Koch 1873a:453
Migas australis Wilton 1968:100
Migas borealis Wilton 1968:82
Migas cambridgei Wilton 1968:116
Migas cantuarius Wilton 1968:126
Migas centralis Wilton 1968:92
Migas cumberi Wilton 1968:101
Migas distinctus O. Pickard-Cambridge 1879d:683
Migas gatenbyi Wilton 1968:103
Migas giveni Wilton 1968:95
Migas goyeni Wilton 1968:117
Migas hesperus Wilton 1968:97
Migas hollowayi Wilton 1968:87
Migas insularis Wilton 1968:96
Migas kirki Wilton 1968:83
Migas kochi Wilton 1968:124
Migas linburnensis Wilton 1968:114
Migas lomasi Wilton 1968:105
Migas marplesi Wilton 1968:112
Migas minor Wilton 1968:84
Migas otari Wilton 1968:87
**Migas paradoxus* L. Koch 1873a:467
Migas quintus Wilton 1968:86
Migas sandageri Goyen 1891:123
Migas saxatilis Wilton 1968:119 **Figs 5.1, 5**
Migas secundus Wilton 1968:89
Migas solitarius Wilton 1968:121
Migas taierii Todd 1945:403
Migas tasmani Wilton 1968:123
Migas toddae Wilton 1968:107
Migas tuhoe Wilton 1968:91

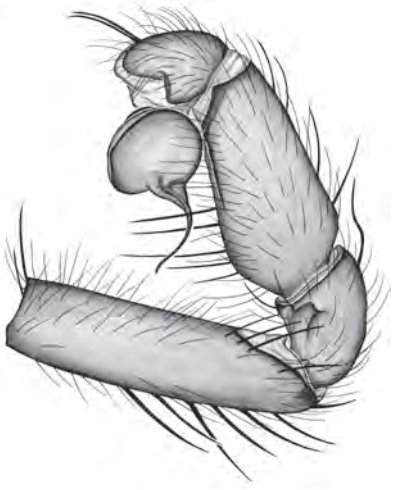


5.1 *Migas saxatilis* Wilton 1968

5.2

5.3

5.4



5.5

Idiopidae

Diversity

1 genus, 42 species.

Summary description

Medium to very large mygalomorphs (7.9–30.0 mm), 3 claws, 8 eyes.

Diagnosis

Spinnerets short (Fig. 6.2); chelicerae with prominent rastellum (Fig. 6.3); sternum with 6 sigilla (Fig. 6.4).

Similar families

Hexathelidae and **Nemesiidae** have long posterior spinnerets (shorter in Idiopidae). **Migidae** have 2 sigilla on the sternum (6 in Idiopidae). All other mygalomoph families lack a rastellum (present in Idiopidae).

Taxonomic notes

The genus was reviewed by Forster (1968) who reported that further divisions within *Cantuaria* may be needed when additional material has been acquired and studied. *Cantuaria* can be divided into two species groups based on the presence or absence of a hinged lid on the burrow. Given the limited distribution of most species, the discovery of additional species in geographically isolated areas is likely. The existence of 20 undescribed species is suspected (R.J. Raven, pers. comm.). Only 13 species are known from both sexes.

Key references

Forster 1968, Forster & Forster 1999.

Endemicity, habitat and distribution

The genus *Cantuaria* is endemic to New Zealand. All species make burrows with or without a hinged lid and sometimes with a second entrance. Many species are associated with wet forests where they build burrows under or in rotten logs. On the west coast of the South Island, they are found within dense wet bush, clay banks and stony or moist tussock-covered habitats. Widespread in New Zealand, but most species are found in the South Island.

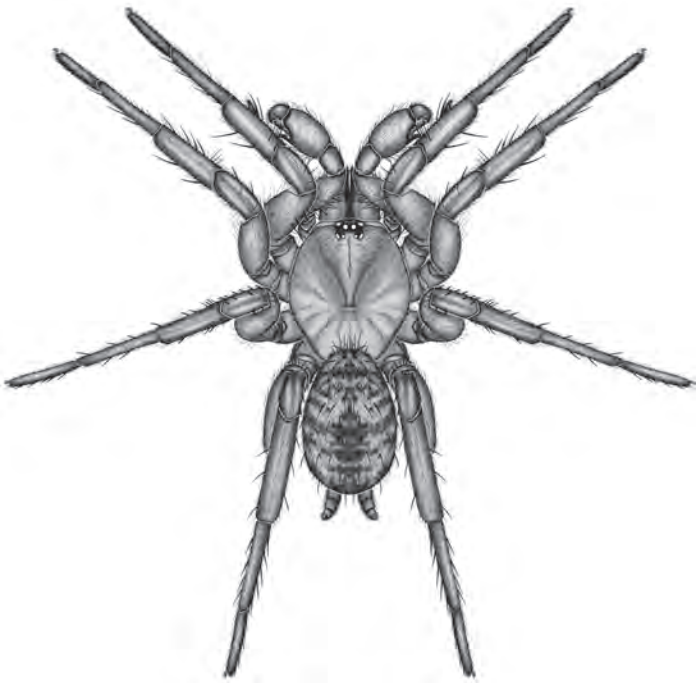
Classification and nomenclature notes

Originally placed in Ctenizidae by Forster (1968) and transfered to Idiopidae by Raven (1985a). Referred to as *Misgolas* by Forster & Forster (1999).

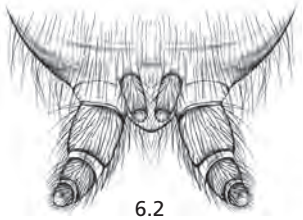
Species list

IDIOPIDAE Simon 1889m:180
- *Cantuaria* Hogg 1902:123
  - *Cantuaria abdita* Forster 1968:69
  - *Cantuaria allani* Forster 1968:71
  - *Cantuaria aperta* Forster 1968:43
  - *Cantuaria apica* Forster 1968:58
  - *Cantuaria assimilis* Forster 1968:33
  - *Cantuaria borealis* Forster 1968:60
  - *Cantuaria catlinensis* Forster 1968:68
  - *Cantuaria cognata* Forster 1968:20
  - *Cantuaria collensis* (Todd 1945:385)
  - *Cantuaria delli* Forster 1968:72
  - **Cantuaria dendyi* (Hogg 1901:237)
  - *Cantuaria depressa* Forster 1968:37
  - *Cantuaria dunedinensis* Forster 1968:35
  - *Cantuaria gilliesii* (O. Pickard-Cambridge 1878b:284)
  - *Cantuaria grandis* Forster 1968:42
  - *Cantuaria huttonii* (O. Pickard-Cambridge 1879d:682)
  - *Cantuaria insulana* Forster 1968:27
  - *Cantuaria isolata* Forster 1968:67
  - *Cantuaria johnsi* Forster 1968:47
  - *Cantuaria kakahuensis* Forster 1968:20
  - *Cantuaria kakanuiensis* Forster 1968:53
  - *Cantuaria lomasi* Forster 1968;38
  - *Cantuaria magna* Forster 1968:44
  - *Cantuaria marplesi* (Todd 1945:386)
  - *Cantuaria maxima* Forster 1968:42
  - *Cantuaria medialis* Forster 1968:26
  - *Cantuaria minor* Forster 1968:65
  - *Cantuaria myersi* Forster 1968:22
  - *Cantuaria napua* Forster 1968:31
  - *Cantuaria orepukiensis* Forster 1968:61
  - *Cantuaria parrotti* Forster 1968:54
  - *Cantuaria pilama* Forster 1968:30
  - *Cantuaria prina* Forster 1968:46
  - *Cantuaria reducta* Forster 1968:18
  - *Cantuaria secunda* Forster 1968:49
  - *Cantuaria sinclairi* Forster 1968:19
  - *Cantuaria stephenensis* Forster 1968:28
  - *Cantuaria stewarti* (Todd 1945:382)
  - *Cantuaria sylvatica* Forster 1968:65
  - *Cantuaria toddae* Forster 1968:50
  - *Cantuaria vellosa* Forster 1968:40
  - *Cantuaria wanganuiensis* (Todd 1945:389)

Undetermined / undescribed taxa
- *Cantuaria* sp. **Figs 6.1, 5**

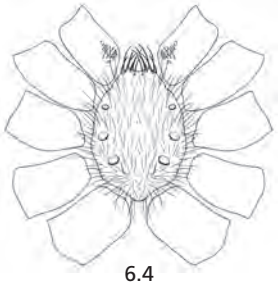


6.1 *Cantuaria* sp.



6.2

6.3



6.4

6.5

Gradungulidae

Diversity

3 genera, 3 species.

Summary description

Medium to large araneomorphs (10–20 mm), cribellate, haplogyne, 2 claws, 8 eyes.

Diagnosis

Semidiaxial chelicerae (Fig. 7.2); 2 pairs of book lungs; dissimilar tarsal claws on legs I–II (Fig. 7.3).

Similar families

Distinctive family, male palps very characteristic. *Gradungula sorenseni* can be mistaken for Lycosidae or Pisauridae in the field, but easily recognised by the eye arrangement and tarsal claws on legs I–II.

Taxonomic note

The discovery of additional species is unlikely.

Key references

Forster 1955a, Forster *et al.* 1987.

Endemicity, habitat and distribution

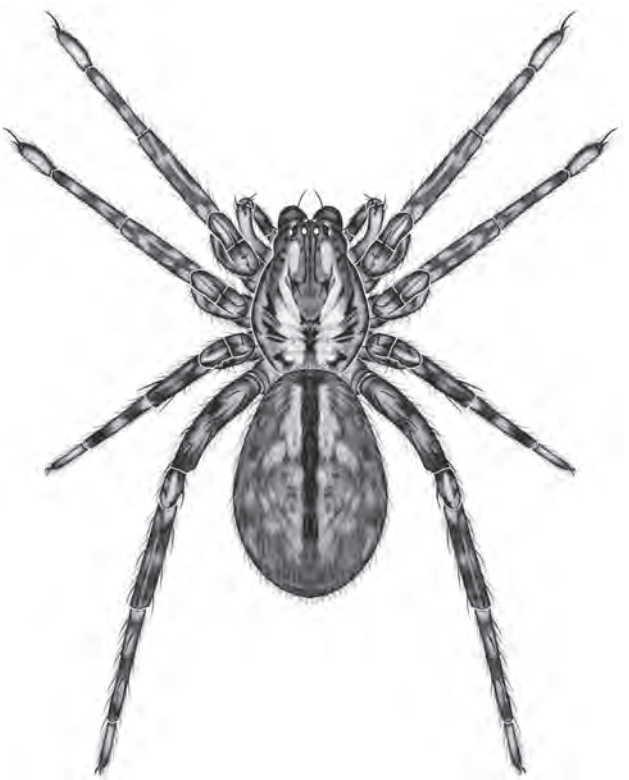
All New Zealand genera are endemic. *Pianoa isolata* is known only from Waikaia forest, a small isolated patch of rugged bush in the South Island (Forster & Forster 1999). *Gradungula sorenseni* is also a native forest species found on the west coast of the South Island, around Nelson and on Stewart Island (Forster 1955a, Forster *et al.* 1987).

Conservation note

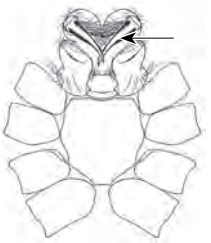
Spelungula cavernicola is a protected species known from caves located in the north west of the South Island, but is a troglophile rather than a troglobite.

Species list

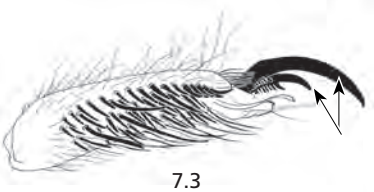
GRADUNGULIDAE Forster 1955a:277
- *Gradungula* Forster 1955a:277
  - **Gradungula sorenseni* Forster 1955a:278 **Figs 7.1, 4–5**
- *Pianoa* Forster *in* Forster *et al.* 1987:86
  - **Pianoa isolata* Forster *in* Forster *et al.* 1987:88 **Fig 7.7**
- *Spelungula* Forster *in* Forster *et al.* 1987:63
  - **Spelungula cavernicola* Forster *in* Forster *et al.* 1987:64 **Fig 7.6**



7.1 *Gradungula sorenseni* Forster 1955



7.2



7.3

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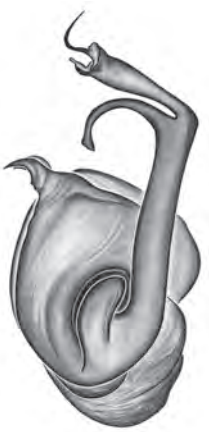
7.5



7.6

7.7

Segestriidae

Diversity

2 genera, 4 species.

Summary description

Small to medium-sized araneomorphs (4–10 mm), ecribellate, haplogyne, 3 claws, 6 eyes.

Diagnosis

Third pair of legs directed forward (Fig. 8.2); posterior tracheal spiracles positioned near the epigastric furrow (Fig. 8.3).

Similar families

Dysderidae have 2 tarsal claws (3 in Segestriidae); third pair of legs directed posteriorly (anteriorly directed in Segestriidae).

Taxonomic notes

Segestriidae are badly in need of taxonomic attention. Almost none of the species are recognisable based on published descriptions and at least 11 undescribed species are known (P.J. Sirvid, pers. comm.). Forster & Forster (1999) reported the occurrence of *Gippsicola*, but no species belonging in that genus have been described yet.

Key reference

Forster & Forster 1999.

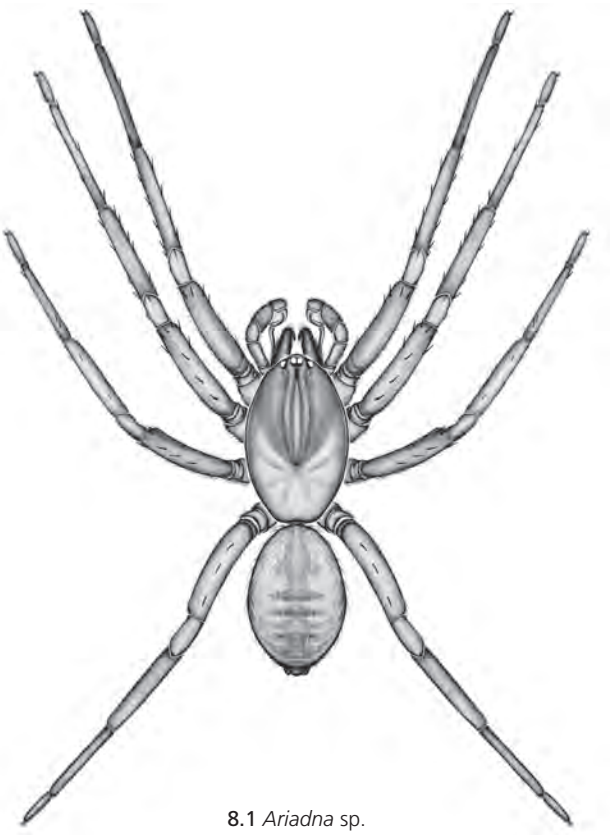
Endemicity, habitat and distribution

Limited taxonomic knowledge makes it difficult to cover this section. All species are apparently endemic. Most species were described over 100 years ago and were assigned to Old World genera, which are likely incorrect. They are associated with a wide range of habitats: from open country to native forests, seashores and mountains. They are usually found under rocks in open habitats, in hollow branches and vacant holes of boring insects, or associated with rotting logs on forest floors. These spiders are well adapted for life in tunnels with their elongate body form and three pairs of legs directed forward. At night, they usually rest at the mouth of their burrow or tunnel, which is lined with silk, and sometimes has silk lines radiating from the entrance. Their distribution is unknown.

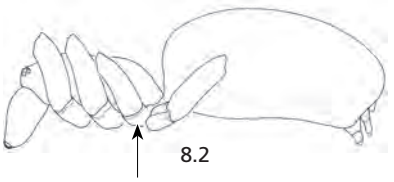
Species list

SEGESTRIIDAE Simon 1893a:319
- *Ariadna* Audouin 1826:308
  - CH *Ariadna barbigera* Simon 1905d:416
  - *Ariadna bellatoria* de Dalmas 1917a:339
  - *Ariadna septemcincta* (Urquhart 1891a:128)
- *Segestria* Latreille 1804b:134
  - *Segestria saeva* Walckenaer 1837:269

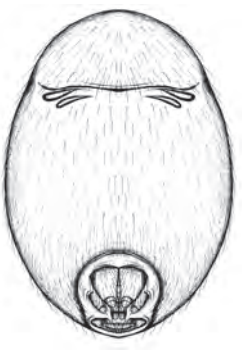
Undetermined / undescribed taxa
- *Ariadna* Audouin 1826:308
  - *Ariadna* sp. **Figs 8.1, 4**
- *Gippsicola* Hogg 1900:88
  - *Gippsicola* sp.



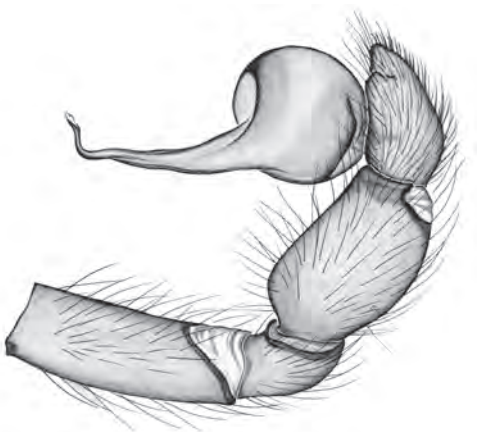
8.1 *Ariadna* sp.



8.2



8.3



8.4

Dysderidae

Diversity

1 genus, 1 species.

Summary description

Large araneomorphs (12–15 mm), ecribellate, haplogyne, 3 claws, 6 eyes.

Diagnosis

Distinct pair of tracheal spiracles posterior to book lung slit (Fig. 9.2). Porrect chelicerae (Fig. 9.1), not fused at base, with toothed margins and long fangs.

Similar families

Orsolobidae have a double row of pectinations on tarsal claws (single row in Dysderidae). **Oonopidae** are much smaller size: 1.5 mm (> 12 mm in Dysderidae); eye region occupies about 2/3 of the cephalon width (1/3 for Dysderidae). **Segestriidae** have 3 tarsal claws (2 in Dysderidae); leg III is anteriorly directed (posteriorly directed in Dysderidae).

Taxonomic notes

As the only species is the cosmopolitan *Dysdera crocata* and no other Dysderidae are known from Australia, the possibility of additional species is extremely low.

Key references

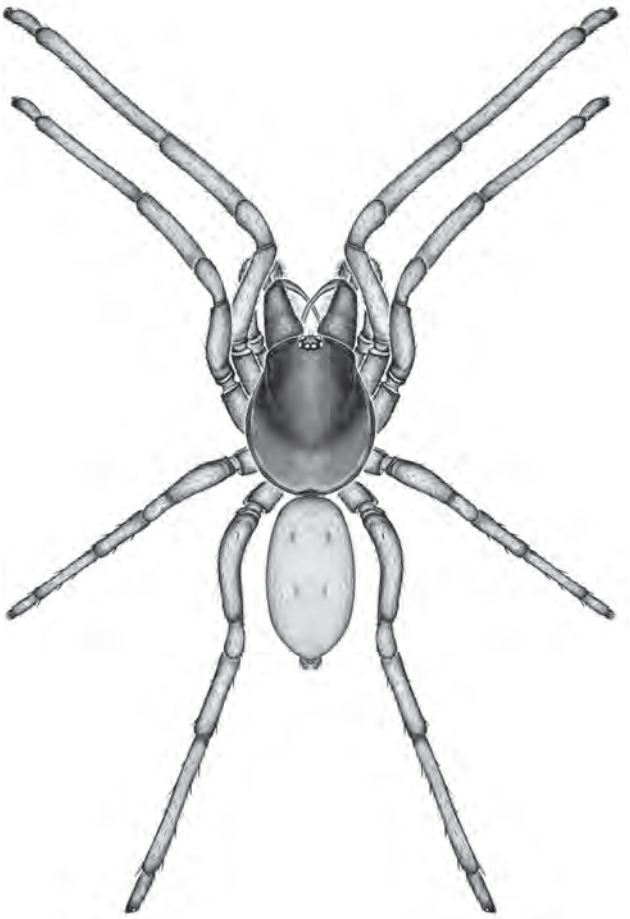
Deeleman-Reinhold & Deeleman 1988, Ubick 2005f.

Endemicity, habitat and distribution

The only species known is *Dysdera crocata,* a synanthropic species (Ubick 2005f) likely introduced with human activities. It is widespread and usually associated with houses and gardens (Forster 1967).

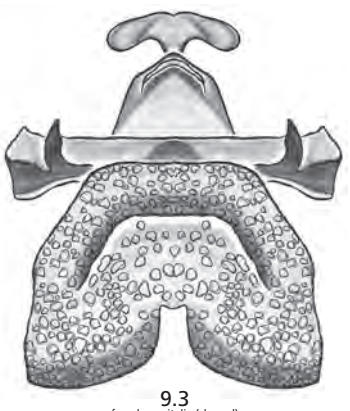
Species list

DYSDERIDAE C.L. Koch 1837g:20
Dysderinae Cooke 1965a:1027
Dysdera Latreille 1804b:134
[AI] *Dysdera crocata* C.L. Koch 1838e:81 **Figs 9.1–4**



9.1 *Dysdera crocata* L. Koch 1838

9.2



9.3
female genitalia (cleared)

9.4

Oonopidae

Diversity

1 genus, 1 species.

Summary description

Minute-sized araneomorphs (0.8 mm), ecribellate, haplogyne, 2 claws, 6 eyes.

Diagnosis

Palpi of females without claws, 6 rather large eyes in a compact group that occupies 2/3 of the width of the cephalon, tarsal organ not elevated.

Similar families

Orsolobidae differ by the presence of elevated tarsal organ (no elevated tarsal organ in Oonopidae); female palp with a claw (absent in Oonopidae); endites that are parallel (wider at base in Oonopidae); abdomen usually pigmented and/or patterned (no pattern or pigmentation in Oonopidae). The single species of **Dysderidae** is much larger, > 12 mm (0.8 mm for Oonopidae); eye region occupies at most 1/3 of the width of the cephalon (2/3 in Oonopidae).

Taxonomic notes

Only one species, *Kapitia obscura,* has been recorded, but an undescribed *Orchestina* is also known (N. Dupérré, unpublished). The existence of additional species of Oonopidae in New Zealand is very unlikely (N.I. Platnick, pers. comm.).

Key reference

Forster 1956b.

Endemicity, habitat and distribution

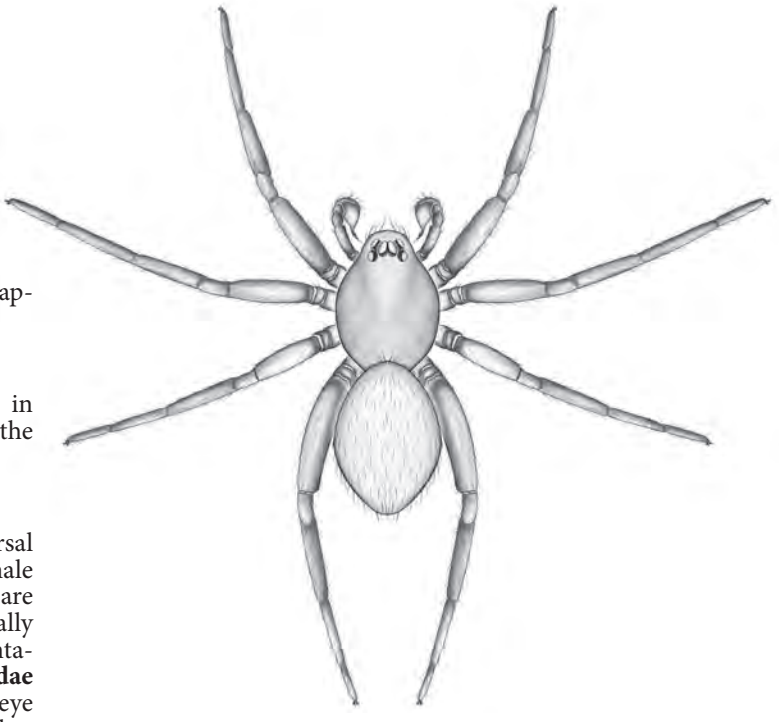
The family is represented only by *Kapitia obscura,* an endemic monotypic genus. The species is rare and reported from the southern portion of the North Island, where it is found in leaf litter (Forster & Forster 1999).

Classification and nomenclature notes

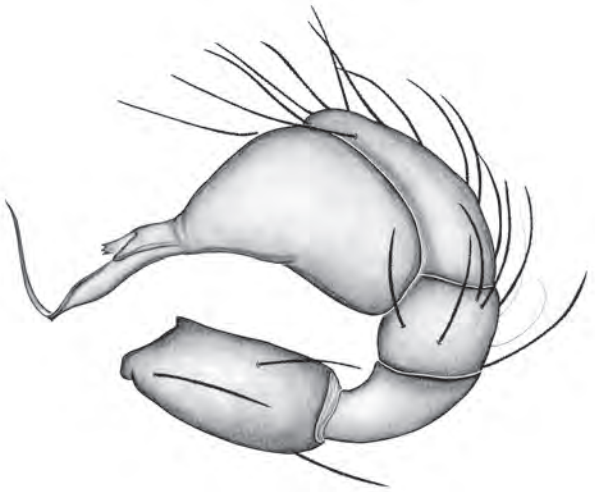
Many species were originally described in Oonopidae but all except *Kapitia obscura* have been transferred to Orsolobidae.

Species list

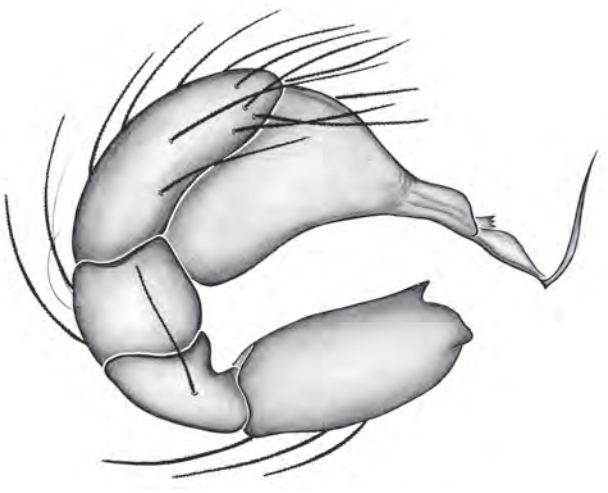
OONOPIDAE Simon 1890a:80
Kapitia Forster 1956b:166
Kapitia obscura* Forster 1956b:166 **Figs 10.1–4
Undetermined / undescribed taxa
Orchestina Simon 1882c:237
Orchestina sp.



10.1 *Kapitia obscura* Forster 1956



10.2



10.3

10.4
female genitalia (cleared)

Orsolobidae

Diversity

16 genera, 106 species.

Summary description

Minute to medium-sized araneomorphs (1–7 mm), haplogyne, ecribellate, 2 claws, 6 eyes.

Diagnosis

Elevated tarsal organs (Fig. 11.3), tarsal claws usually with 2 rows of pectinations with a proximal, expanded, tooth-bearing flange on outer margins (Fig. 11.2).

Similar families

Oonopidae differ by the absence of a claw on the female palp (present in Orsolobidae); the absence of elevated tarsal organ (present in Orsolobidae); endites that are broader at base (parallel in Orsolobidae); the absence of teeth along the cheliceral fang furrow (usually present in Orsolobidae); whitish unpatterned abdomen (usually patterned and pigmented in Orsolobidae). **Dysderidae** have claws with a single row of pectinations; the single species known from New Zealand is much larger > 12 mm (≤ 7 mm for Orsolobidae); have 3 claws (2 in Orsolobidae).

Taxonomic notes

Forster & Platnick (1985) published a comprehensive revision of the family, but also stated that the collections were patchy in distribution and the full fauna will no doubt greatly exceed the number of known species. No material collected after the publication of that paper has become available for taxonomic assessment (N.I. Platnick, pers. comm.).

Key references

Forster 1956b, Forster & Platnick 1985.

Endemicity, habitat and distribution

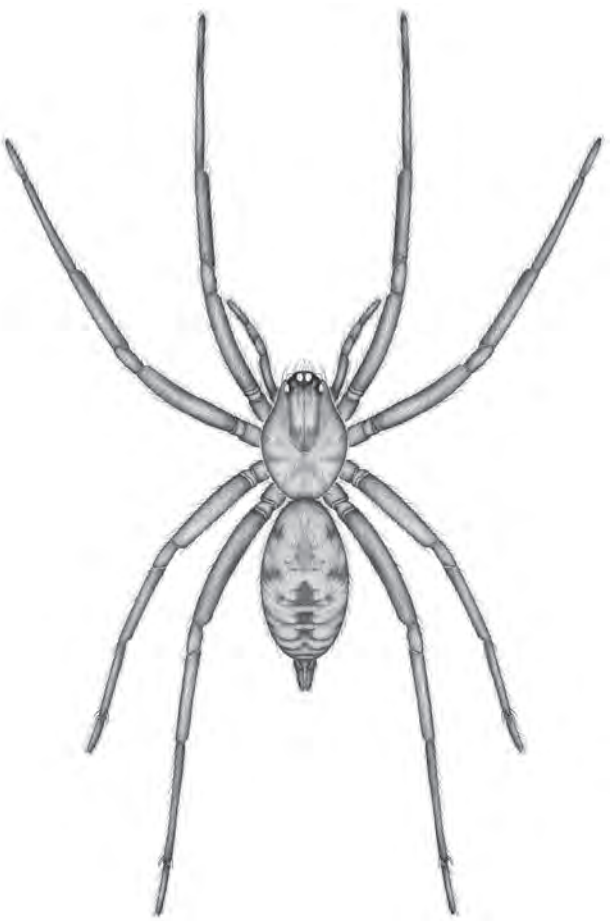
Despite its relatively small size, New Zealand harbours the richest orsolobid fauna of the world (Forster & Forster 1999). Most species are found in leaf litter or moss of rainforests, but a less diverse fauna inhabit tussock grassland and scrub in both lowland regions and above the bush line. The family is widespread.

Additional note

Anopsolobus subterraneus is a troglobite only known from one female collected in an artesian bore in Nelson (South Island) (Forster & Platnick 1985).

Species list

ORSOLOBIDAE Cooke 1965a:1027
- *Anopsolobus* Forster & Platnick 1985:134
  - **Anopsolobus subterraneus* Forster & Platnick 1985:134
- *Ascuta* Forster 1956b:101
  - *Ascuta australis* Forster 1956b:130
  - *Ascuta cantuaria* Forster & Platnick 1985:106
  - *Ascuta inopinata* Forster 1956b:137
  - *Ascuta insula* Forster & Platnick 1985:106
  - *Ascuta leith* Forster & Platnick 1985:105
  - **Ascuta media* Forster 1956b:101
  - *Ascuta monowai* Forster & Platnick 1985:106
  - *Ascuta montana* Forster & Platnick 1985:101
  - *Ascuta musca* Forster & Platnick 1985:99
  - *Ascuta ornata* Forster 1956b:107 **Figs 11.4–5**
  - *Ascuta parornata* Forster & Platnick 1985:108 **Figs 11.1, 6**
  - *Ascuta taupo* Forster & Platnick 1985:104
  - *Ascuta tongariro* Forster & Platnick 1985:98
  - *Ascuta univa* Forster & Platnick 1985:96
- *Bealeyia* Forster & Platnick 1985:131
  - **Bealeyia unicolor* Forster & Platnick 1985:131
- *Dugdalea* Forster & Platnick 1985:132
  - **Dugdalea oculata* Forster & Platnick 1985:133
- *Duripelta* Forster 1956b:139
  - *Duripelta alta* Forster & Platnick 1985:192
  - *Duripelta australis* Forster 1956b:144
  - **Duripelta borealis* Forster 1956b:139
  - *Duripelta egmont* Forster & Platnick 1985:183
  - *Duripelta hunua* Forster & Platnick 1985:180
  - *Duripelta koomaa* Forster & Platnick 1985:195
  - *Duripelta mawhero* Forster & Platnick 1985:184
  - *Duripelta minuta* Forster 1956b:147
  - *Duripelta monowai* Forster & Platnick 1985:191
  - *Duripelta otara* Forster & Platnick 1985:188
  - *Duripelta pallida* (Forster 1956b:132)
  - *Duripelta paringa* Forster & Platnick 1985:185
  - *Duripelta peha* Forster & Platnick 1985:187
  - *Duripelta scuta* Forster & Platnick 1985:194
  - *Duripelta totara* Forster & Platnick 1985:192
  - *Duripelta townsendi* Forster & Platnick 1985:183
  - *Duripelta watti* Forster & Platnick 1985:196



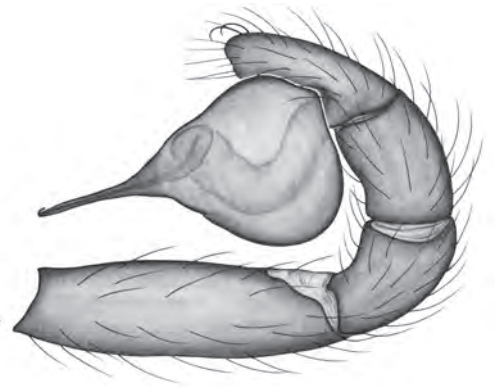
11.1 *Ascuta ornata* Forster 1956

11.2

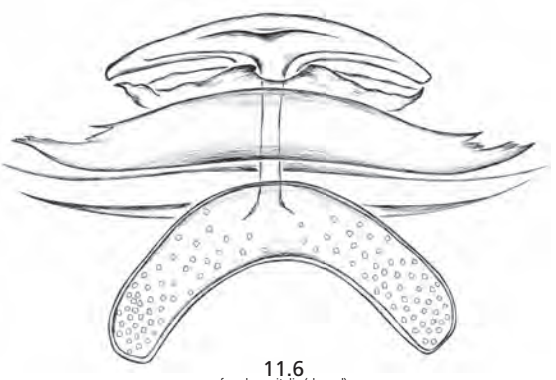
11.3

Maoriata Forster & Platnick 1985:162
**Maoriata magna* (Forster 1956b:104)
Maoriata montana Forster & Platnick 1985:166
Maoriata vulgaris Forster & Platnick 1985:163
Orongia Forster & Platnick 1985:138
**Orongia medialis* Forster & Platnick 1985:138
Orongia motueka Forster & Platnick 1985:139
Orongia whangamoa Forster & Platnick 1985:140
Paralobus Forster & Platnick 1985:141
**Paralobus salmoni* (Forster 1956b:110)
Pounamuella Forster & Platnick 1985:197
AU *Pounamuella australis* (Forster 1964b:69)
Pounamuella complexa (Forster 1956b:163)
Pounamuella hauroko Forster & Platnick 1985:201
Pounamuella hollowayae (Forster 1956b:160)
Pounamuella insula Forster & Platnick 1985:203
Pounamuella kuscheli Forster & Platnick 1985:203
Pounamuella ramsayi (Forster 1956b:154)
**Pounamuella vulgaris* (Forster 1956b:151)
Subantarctia Forster 1955c:170
Subantarctia centralis Forster & Platnick 1985:210
Subantarctia dugdalei Forster 1956b:91
Subantarctia fiordensis Forster 1956b:94
Subantarctia florae Forster 1956b:97
Subantarctia muka Forster & Platnick 1985:210
Subantarctia penara Forster & Platnick 1985:209
Subantarctia stewartensis Forster 1956b:99
Subantarctia trina Forster & Platnick 1985:207
AU **Subantarctia turbotti* Forster 1955c:170
Tangata Forster & Platnick 1985:142
Tangata alpina (Forster 1956b:121)
Tangata furcata Forster & Platnick 1985:158
Tangata horningi Forster & Platnick 1985:156
Tangata kohuka Forster & Platnick 1985:153
Tangata murihiku Forster & Platnick 1985:157
**Tangata nigra* Forster & Platnick 1985:144
Tangata orepukiensis (Forster 1956b:126)
Tangata otago Forster & Platnick 1985:150
Tangata parafurcata Forster & Platnick 1985:160
Tangata plena (Forster 1956b:135)
Tangata pouaka Forster & Platnick 1985:153
Tangata rakiura (Forster 1956b:128)
Tangata stewartensis (Forster 1956b:119)
Tangata sylvester Forster & Platnick 1985:151
Tangata tautuku Forster & Platnick 1985:149
Tangata townsendi Forster & Platnick 1985:161
Tangata waipoua Forster & Platnick 1985:153
Tautukua Forster & Platnick 1985:128
**Tautukua isolata* Forster & Platnick 1985:130
Turretia Forster & Platnick 1985:135
**Turretia dugdalei* Forster & Platnick 1985:137
Waiporia Forster & Platnick 1985:166
Waiporia algida (Forster 1956b:112)
CH *Waiporia chathamensis* Forster & Platnick 1985:175
Waiporia egmont Forster & Platnick 1985:175
Waiporia extensa (Forster 1956b:124)
Waiporia hawea Forster & Platnick 1985:173
Waiporia hornabrooki (Forster 1956b:156)
Waiporia mensa (Forster 1956b:116)
Waiporia modica (Forster 1956b:114)
Waiporia owaka Forster & Platnick 1985:172
Waiporia ruahine Forster & Platnick 1985:1876
Waiporia tuata Forster & Platnick 1985:177
**Waiporia wiltoni* Forster & Platnick 1985:168
Waipoua Forster & Platnick 1985:109
CA *Waipoua gressitti* (Forster 1964b:68)
Waipoua hila Forster & Platnick 1985:114
Waipoua insula Forster & Platnick 1985:111
Waipoua montana Forster & Platnick 1985:114
Waipoua otiana Forster & Platnick 1985:116
Waipoua ponanga Forster & Platnick 1985:113
**Waipoua toronui* Forster & Platnick 1985:109
Waipoua totara (Forster 1956b:158)
Wiltonia Forster & Platnick 1985:117
Wiltonia elongata Forster & Platnick 1985:125
Wiltonia eylesi Forster & Platnick 1985:124
Wiltonia fiordensis Forster & Platnick 1985:126
**Wiltonia graminicola* Forster & Platnick 1985:119
Wiltonia lima Forster & Platnick 1985:121
Wiltonia nelsonensis Forster & Platnick 1985:123
Wiltonia pecki Forster & Platnick 1985:127
Wiltonia porina Forster & Platnick 1985:121
Wiltonia rotoiti Forster & Platnick 1985:124

11.4



11.5



11.6
female genitalia (cleared)

Pholcidae

Diversity

2 genera, 2 species.

Summary description

Small to medium-sized araneomorphs (2–10 mm), ecribellate, haplogyne, 3 claws, 8 eyes.

Diagnosis

Very long legs (Fig. 12.1), chelicerae fused at base (Fig. 12.3), eyes arrange in 2 triads + AME (Fig. 12.2–12.3), male palp with procursus (Fig. 12.6, 12.8).

Similar families

Scytodidae differ by having a strongly convex carapace (slightly elevated in Pholcidae). **Synotaxidae**, **Linyphiidae** and **Cyatholipidae** also have long and slender legs, but eyes are arranged in rows (in triads for Pholcidae).

Taxonomic notes

Forster & Forster (1999) mentioned that two pholcid species have been found, in addition to the widespread *Pholcus phalangioides*. Examination of available material from the Otago Museum only revealed the occurrence of *Psilochorus simoni*, another introduced species (B.A. Huber, pers. comm.).

Key references

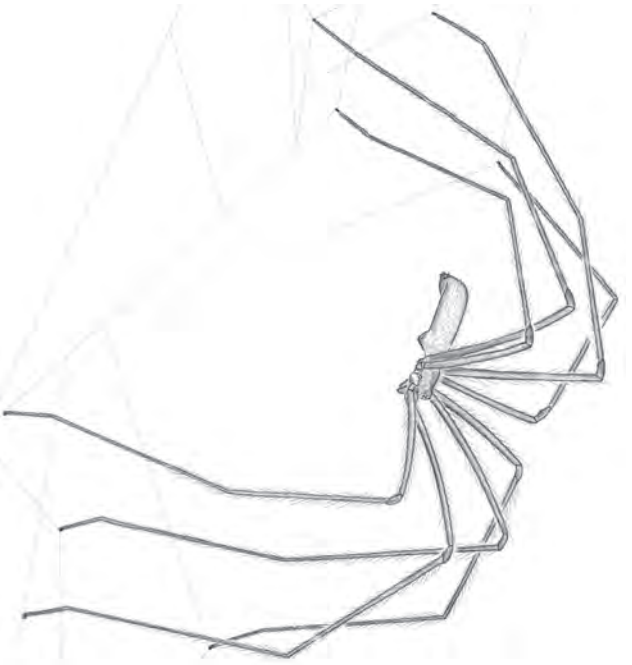
Huber 2001, 2005e.

Endemicity, habitat and distribution

Native pholcids are unknown, but the diverse genus *Wugigarra* Huber 2001 found in eastern Australia may also occur in New Zealand, but has still not been found (B.A. Huber, pers. comm.). *Pholcus phalangioides* has a cosmopolitan distribution and is widespread in New Zealand, while the occurrence of *Psilochorus simoni* has only been reported from North Cape, Taradale and Matamata in the North Island. The occurrence of other introduced pholcids is also likely.

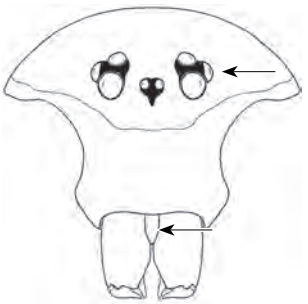
Species list

PHOLCIDAE C.L. Koch 1850:31
Pholcus Walckeneaer 1805:80
[AI] *Pholcus phalangioides* (Fuesslin 1775:61) **Figs 12.1, 4–6**
Psilochorus Simon 1893a:482
[AI] *Psilochorus simoni* Berland 1911:110 **Figs 12.2, 7–9**

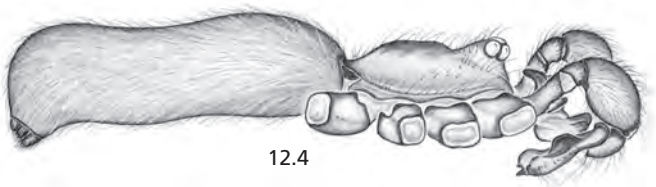


12.1 *Pholcus phalangioides* (Fuesslin 1775)

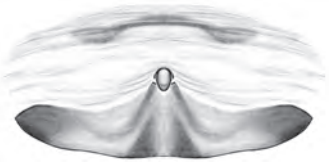
12.2



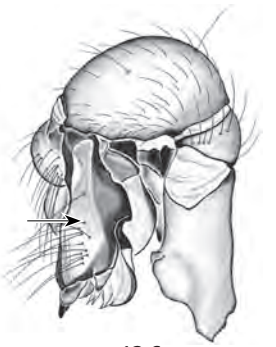
12.3



12.4

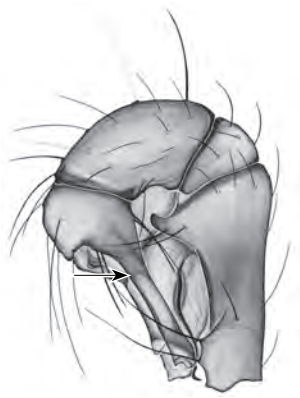


12.5



12.6

12.7



12.8

12.9

Scytodidae

Diversity

1 genus, 1 species.

Summary description

Small araneomorphs (3–6 mm), haplogyne, ecribellate, 3 claws, 6 eyes.

Diagnosis

The family is easily recognised by the strongly convex carapace (Fig. 13.2), the 6 eyes arranged in 3 diads (Fig. 13.1) and the presence of a pair of anchoring holes behind the epigastric furrow (Fig. 13.4),

Similar families

Pholcidae differ in having 8 eyes: 2 triads + PME (6 eyes in Scytodidae); slightly elevated carapace (strongly convex in Scytodidae).

Taxonomic notes

The only species reported is the cosmopolitan *S. thoracica,* also introduced in Australia. Scytodidae do not constitute an important portion of the diversity of Australasia, with only *Dictis striatipes* L. Koch 1872a known from Australia. Therefore, the possibility of additional species in New Zealand seems extremely low.

Key references

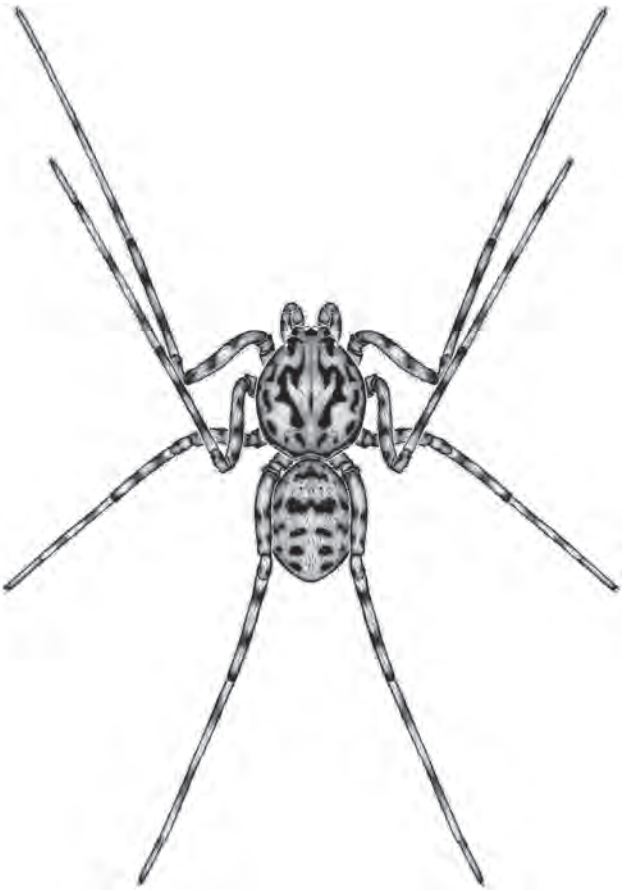
Ubick 2005l, Jocqué & Dippenaar-Schoeman 2006.

Endemicity, habitat and distribution

Scytodes thoracica is a synathropic species (Ubick 2005l) usually associated with houses. It has been found on one occasion in Matamata (North Island), but is likely not yet established (D.J. Court, pers. comm.).

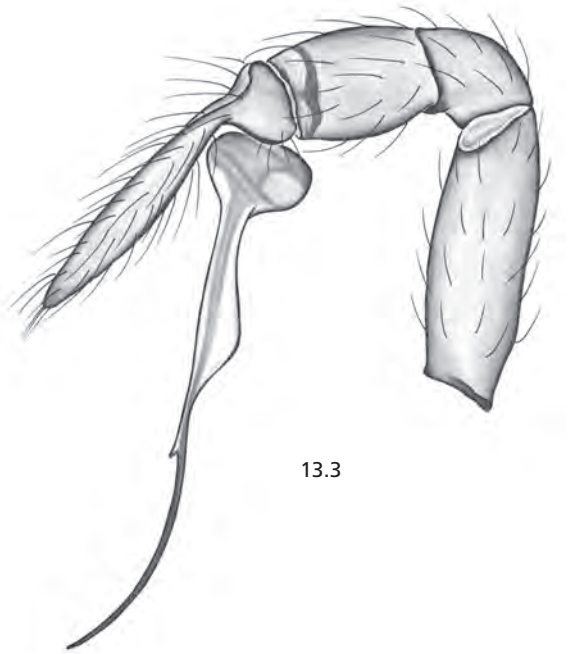
Species list

SCYTODIDAE Blackwall 1862a:379
Scytodes Latreille 1804b:134
[RnE] *Scytodes thoracica* Latreille 1802a:56 **Figs 13.1–4**

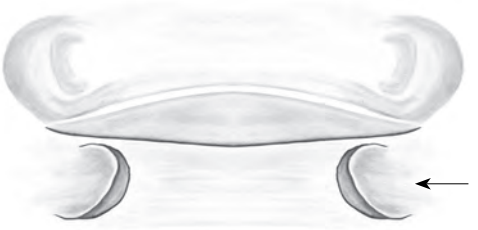


13.1 *Scytodes thoracica* (Latreille 1802)

13.2



13.3



13.4

Periegopidae

Diversity

1 genus, 1 species.

Summary description

Medium-sized araneomorphs (8.0 mm), ecribellate, haplogyne, 3 claws, 6 eyes.

Diagnosis

Six eyes in 3 diads (Fig. 14.1).

Similar families

Huttoniidae have a similar coloration and abdominal pattern, but have 8 eyes (6 in Periegopidae). Other haplogyne families (**Segestriidae, Scytodidae, Dysderidae, Orsolobidae** and **Oonopidae)** have 6 eyes that are not arranged in diads (3 diads in Periegopidae).

Taxonomic notes

Given the restricted distribution of *Periegops suterii* in the South Island, it seems probable that specimens collected from East Cape and the Aldermen Islands (North Island) represent another species. Vink (2006) reported molecular evidence supporting the existence of a second New Zealand species, but a male is needed to confirm this hypothesis.

Key references

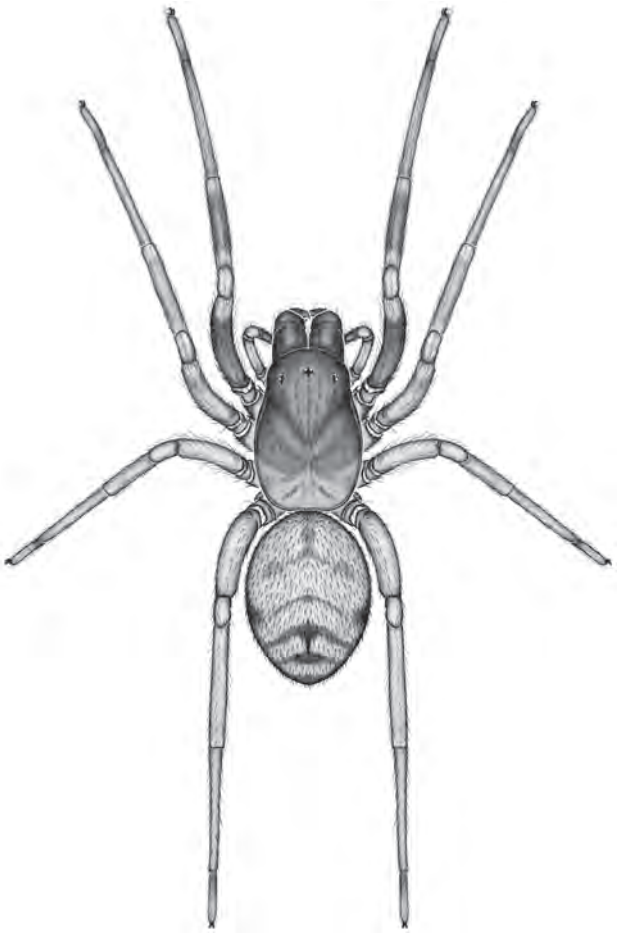
Forster 1995, Vink 2006.

Endemicity, habitat and distribution

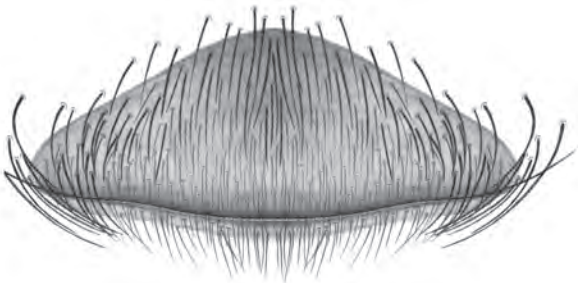
This monogeneric family is endemic to Australia and New Zealand and includes two described species, one in each country. *Periegops suterii* is known only from Banks Peninsula and Riccarton Bush Reserve in the South Island (Vink 2006). The species is found in native beech and podocarp forests in leaf litter, under rocks and logs (Vink 2006).

Species list

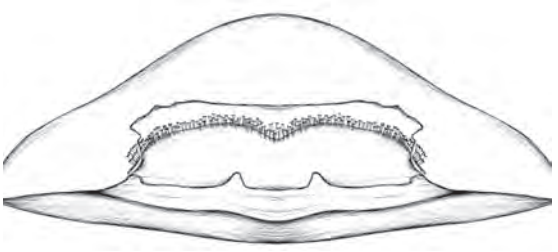
PERIEGOPIDAE Simon 1893a:264
Periegops Simon 1893a:267
Periegops suterii* (Urquhart 1892b:230) **Figs 14.1–4



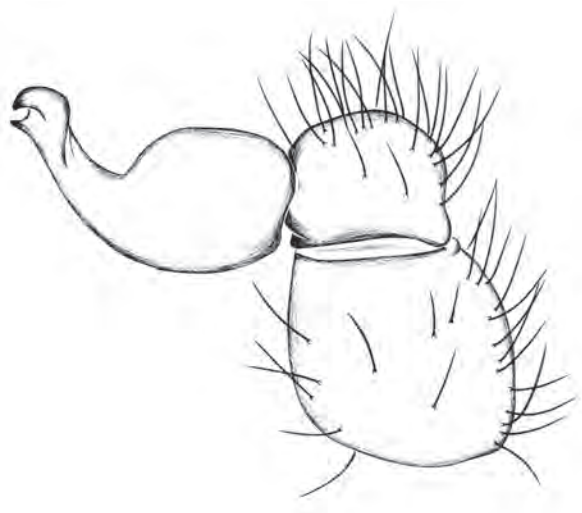
14.1 *Periegops suterii* (Urquhart 1892)



14.2



14.3



10.4
male palp, after Jocqué & Dippenaar-Schoeman 2006

Oecobiidae

Diversity

1 genus, 1 species.

Summary description

Small araneomorphs (2–2.5 mm), entelegyne, cribellate, 3 claws, 6 eyes.

Diagnosis

Large anal tubercle with a fringe of long setae (Fig. 15.2).

Similar families

Oecobiidae are unlikely to be confused with any other spiders, but may be mistaken for **Theridiidae** (*Euryopis*), which differ by the absence of a large anal tubercle fringed with long setae (present in Oecobiidae).

Taxonomic notes

A recent study of Oecobiidae in Australia (M. Harvey, pers. comm.) documented the occurrence of five species, all introduced. This supports the assumption that native Oecobiidae are very unlikely to occur in New Zealand, but that additional introductions are possible.

Key references

Shear 1970a, Craig *et al.* 2005.

Endemicity, habitat and distribution

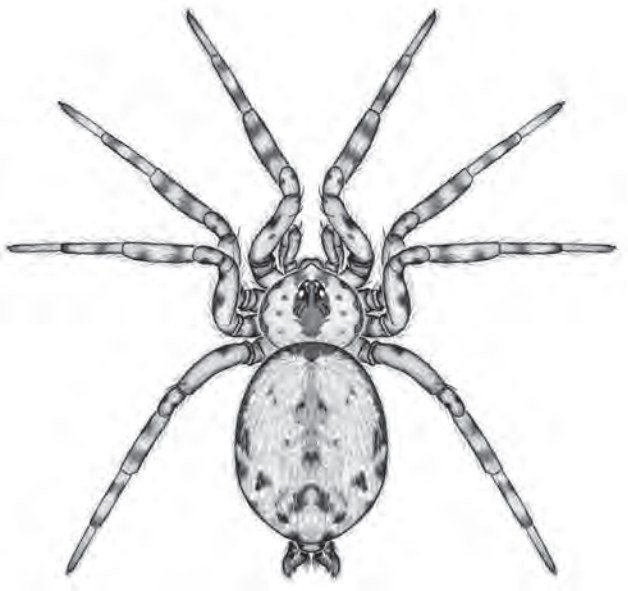
The only representative of the family is *Oecobius navus*, a synanthropic and cosmopolitan species. It is associated with human habitations, where it typically spins small webs in the corner of walls. Their principal prey is ants (Voss *et al.* 2007). They are so far reported only from the North Island.

Classification and nomenclature note

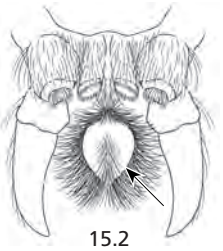
This species was previously reported as *Oecobius annulipes* Lucas 1846 (Forster 1967).

Species list

OECOBIIDAE Blackwall 1862a:382
Oecobius Lucas 1846:101
[AI] **Oecobius navus* Blackwall 1859b:266 **Figs 15.1–4**



15.1 *Oecobius navus* Blackwall 1859



15.2

15.3

15.4

Mimetidae

Diversity

1 genus, 2 species.

Summary description

Small araneomorphs (3.2–4.5 mm), entelegyne, ecribellate, 3 claws, 8 eyes.

Diagnosis

Tibia and metatarsus of legs I and II with a row of long spines on the prolateral surface, with shorter curved spines in the intervals (Figs 16.1–16.2). Sternum and carapace smooth, without alveolations.

16.1 *Australomimetus sennio* (Urquhart 1891)

Similar families

Araneidae, Theridiidae, Linyphiidae do not have long spines with shorter curved spines in between on the tibia and metatarsus of legs I and II (present in Mimetidae). **Malkaridae** can have similar leg spination but have conspicuous sclerotisation (absent in Mimetidae); carapace and sternum with deep alveolations (smooth in Mimetidae); sternum surrounding coxae (not surrounding in Mimetidae).

Taxonomic notes

There are uncertainties around the identity of the New Zealand species, especially females, which have never been adequately illustrated. *Australomimetus sennio* was misidentified in Forster & Platnick 1984 as *A. mendicus* (Harms & Harvey 2009a). There are at least two undescribed species (B.M. Fitzgerald & P.J. Sirvid, pers. comm.).

Key references

Forster & Platnick 1984, Harms & Harvey 2009a, b.

Endemicity, habitat and distribution

Australomimetus is found in Australasia and South East Asia (Harms & Harvey 2009a, b). As far as is known, the New Zealand species are endemic. Mimetidae do not build webs, but are often found in the webs of other spiders, on which they prey. They are usually found on foliage. Due to taxonomic uncertainty, the knowledge of their distribution remains limited, but Chamberlain (1946) stated that *Australomimetus mendicus* is uncommon, but found on both main islands, and *Australomimetus sennio* is reported only from Stratford, the type-locality. However, B.M. Fitzgerald & P.J. Sirvid (pers. comm.) consider *A. sennio* to be widespread. The genitalic structure of the New Zealand species is very similar to some Australian *Australomimetus* species, which suggests they are closely related and/or they can disperse over great distances (D. Harms, pers. comm.).

Classification and nomenclature note

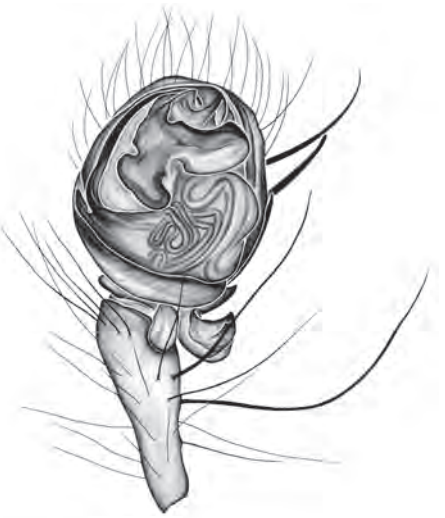
These species were previously placed in *Mimetus* Hentz 1832.

Species list

MIMETIDAE Simon 1881a:27
- *Australomimetus* Heimer 1989:115
  - *Australomimetus mendicus* (O. Pickard-Cambridge 1879d:697)
  - *Australomimetus sennio* (Urquhart 1891a:137) **Figs 16.1, 5**

Undetermined / undescribed taxa
- *Australomimetus* sp. **Figs 16.3–4**

16.2



16.3

16.4

16.5

Malkaridae

Diversity

Unknown; no New Zealand species described yet.

Summary description

Small araneomphs (4 mm), ecribellate, entelegyne, 3 claws, 8 eyes.

Diagnosis

Tibia and metatarsus of legs I and II with a row of long spines on the prolateral surface with shorter curved spines in the intervals (similar to Mimetidae) (Fig. 17.2); male palp with a mid-ectal paracymbium (Fig. 17.4) and a large flange on the conductor (Fig. 17.3); female genitalia heavily sclerotised (Fig. 17.5); unsclerotised area of the abdomen enclosed within the anterior abdominal scutum that contains one or two small, round to oval, internally produced, sclerites; deep alveolations of the carapace (Fig. 17.1) and sternum (Fig. 17.6); Sternoidinae have deep sulci between leg I and palpi (Fig. 17.7).

Similar families

Mimetidae are not heavily sclerotised (scutes and rings present in Malkaridae); the sternum does extend to surround the coxae (surrounding coxae in Malkaridae, Fig. 17.6).

Taxonomic notes

No New Zealand species have been described yet, but based on information contained in an unfinished manuscript by Forster and other sources, Malkaridae are likely represented by 3 new genera (P.J. Sirvid, pers. comm.) and 12 new species (R.J. Raven, pers. comm.). Both Sternoidinae and Malkarinae have been reported from New Zealand. The molecular phylogenetic analysis of Rix *et al.* (2008) did not a support close relationship between Sternoidinae and the type genus *Malkara* Davies 1980a:377.

Key references

Moran 1986, Platnick & Forster 1987, Rix *et al.* 2008.

Endemicity, habitat and distribution

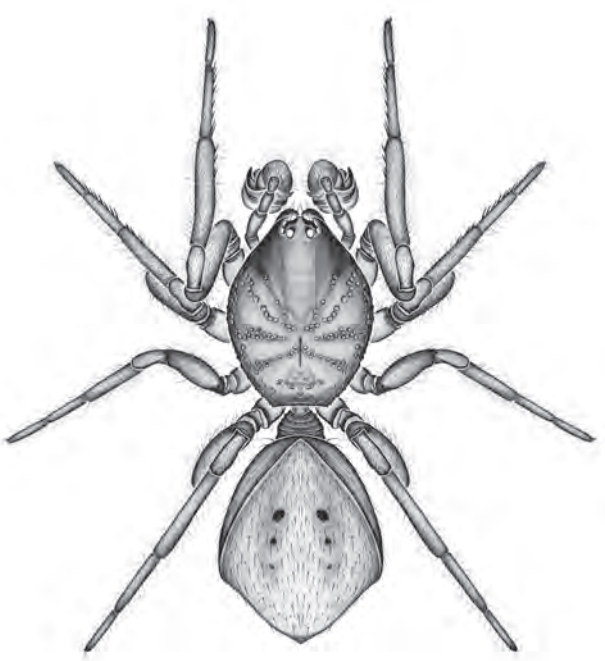
Very little is known about New Zealand Malkaridae, but these are apparently endemic to species and generic levels. They are found in leaf litter in native forest (Forster 1967), and nothing is known about their distribution.

Species list

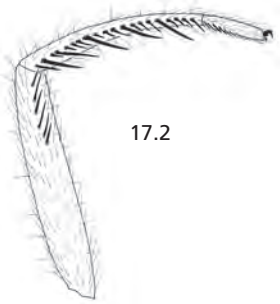
MALKARIDAE Davies 1980a:377
Undetermined / undescribed taxa

Malkarinae Davies 1980a:377
Malkarinae sp. a **Figs 17.1, 3–4**
Malkarinae sp. b **Fig. 17.5**

Sternoidinae Harvey 2002a:456 **Figs 17.7**
Sternoidinae sp. a



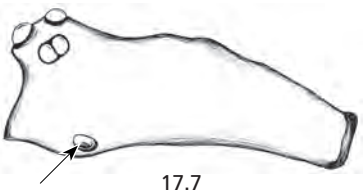
17.1 Malkarinae sp. a



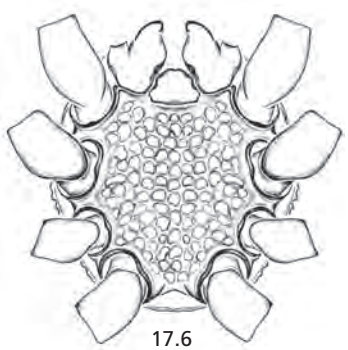
17.2

17.3

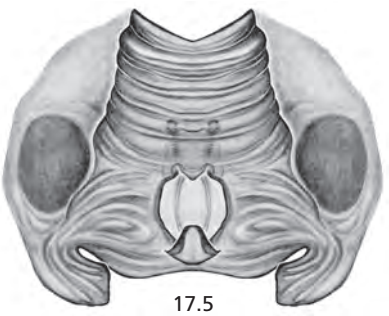
17.4



17.7



17.6



17.5

Huttoniidae

Diversity

1 genus, 1 species.

Summary description

Small to medium-sized araneomorphs (4–12 mm), ecribellate, haplogyne, 3 claws, 8 eyes.

Diagnosis

Eight eyes in 2 rows, anterior row recurved, posterior row procurved (Fig. 18.1). Prolateral scopula of spatulate setae on tarsi and metatarsi I and II (Fig. 18.2); triangular endites directed across labium (Fig. 18.3). The genital bulb of the male palp is concealed and covered with setae (Figs 18.4–18.5).

Similar families

Oonopidae, Orsolobidae, Periegopidae, Scytodidae, Segestriidae (all other haplogyne families) differ in having 6 eyes (8 eyes in Huttoniidae).

Taxonomic notes

In an incomplete manuscript, Forster considered describing 20 additional species (R.J. Raven, pers. comm., Forster & Forster 1999). Forster & Platnick (1984) also reported the possibility of a second genus that is still not described.

Key references

Forster & Platnick 1984, Forster & Forster 1999, Jocqué & Dippenaar-Schoeman 2006.

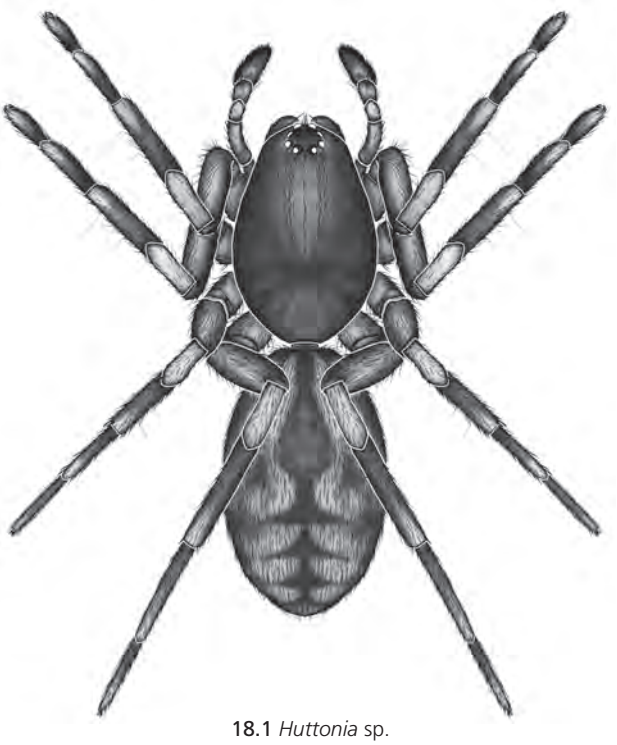
Endemicity, habitat and distribution

Huttoniidae appear to be a family endemic to New Zealand. Neolanidae and Toxopidae were once considered to be endemic families, but are now included in Amphinectidae and Cycloctenidae, respectively. Forster (1967) and Forster & Forster (1999) report that *Huttonia* is found on the forest floor and among dead fronds of ferns where they construct loosely spun retreats. However, specimens have also been collected in alpine habitats above the tree line and in tussockland. Huttoniidae are found throughout New Zealand. Forster & Platnick (1984) also speculated that searches in suitable habitats of Australia may reveal that Huttoniidae occur outside New Zealand.

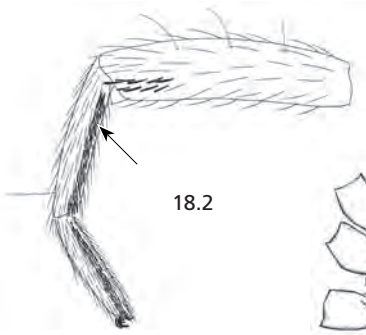
Species list

HUTTONIIDAE Simon 1893a:393
Huttonia O. Pickard-Cambridge 1879d:684
**Huttonia palpimanoides* O. Pickard-Cambridge 1879d:685

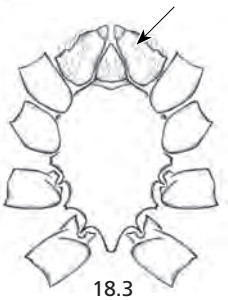
Undetermined / undescribed taxa
Huttonia sp. a **Figs 18.1, 4–5**
Huttonia sp. b **Figs 18.6–7**



18.1 *Huttonia* sp.



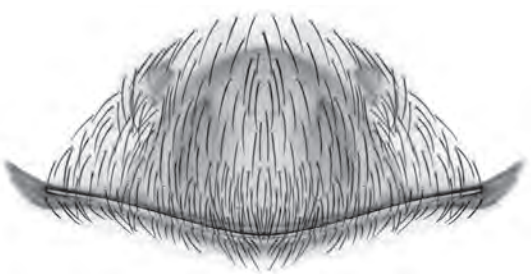
18.2



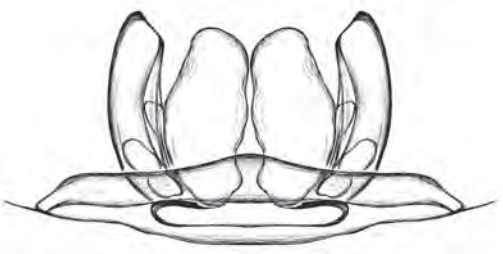
18.3

18.4

18.5



18.6



18.7

Micropholcommatidae

Diversity

6 genera, 16 species.

Summary description

Minute araneormophs (0.7–1.5 mm); ecribellate, entelegyne, 3 claws, 6 or 8 eyes.

Diagnosis

Smooth sternum (except *Taphiassa punctata*); presence of an evaginated tegular ridge on male pedipalp (arrow Fig. 19.2); male pedipalp with ligular patellar apophysis; tarsi longer than metatarsi (Fig. 19.1); all legs subequal; males often with a dorsal scutum (Fig. 19.1); eyes ovoid rather than round (Fig. 19.1) (except *Taphiassa punctata*).

Similar families

Anapidae females lack palpi (present in New Zealand Micropholcommatidae); longer legs I and II compared to III and IV (approximately subequal in Micropholcommatidae). **Mysmenidae** have a ventral, subapical, sclerotised spot on at least leg I (absent in Micropholcommatidae); males metatarsus I usually has a clasping spur (absent in Micropholcommatidae). **Theridiidae** (*Pholcomma*) have a comb on tarsus IV (absent in Micropholcommatidae).

Taxonomic notes

The family has been revised at the generic level by Rix & Harvey (2010) and ten undescribed species are still suspected in New Zealand. *Textricella* and *Parapua* are invalid junior synonyms of *Eterosonycha* Butler 1932:115 and *Taphiassa*, respectively. *Parapua punctata* is now placed in *Taphiassa*, *Textricella aucklandica* was transferred to *Algidiella*, *Textricella nigra* to *Taliniella* and *Textricella pusilla* to *Tinytrella*. Other species previously included in *Textricella* are now in *Rayforstia*.

Key references

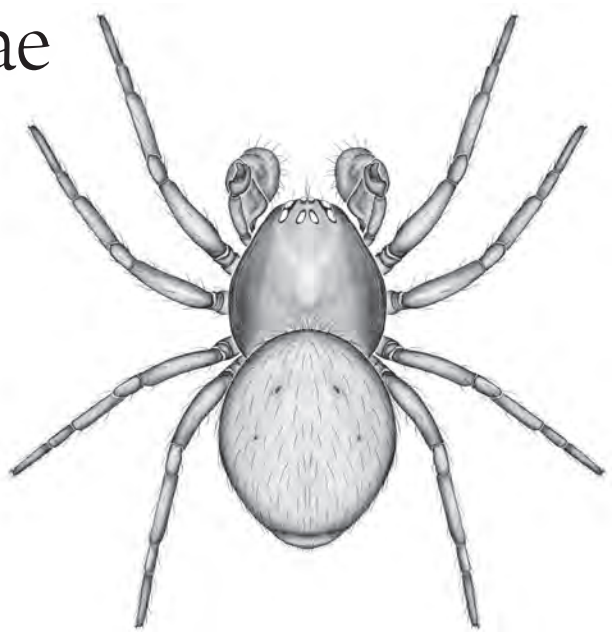
Forster 1959, Platnick & Forster 1986, Rix *et al.* 2008, Rix & Harvey 2010.

Endemicity, habitat and distribution

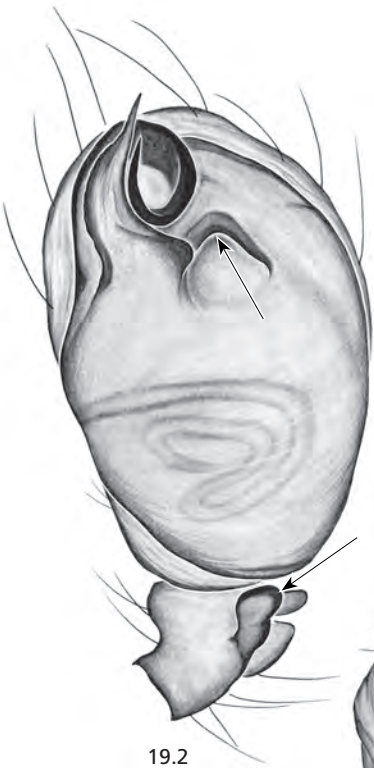
Micropholcommatidae are known from Australasia, Chile and Brazil. All New Zealand species are endemics. Micropholcommatids live in forests and are associated with mosses and leaf litter.

Species list

MICROPHOLCOMMATIDAE Hickman 1944b:183
Taphiassinae Rix & Harvey 2010:79
Taphiassa Simon 1880i:172
Taphiassa punctata (Forster 1959:301)
Micropholcommatinae Hickman 1944b:183
Algidiella Rix & Harvey 2010:70
AU **Algidiella aucklandica* (Forster 1955c:200)
Pua Forster 1959:299
**Pua novaezealandiae* Forster 1959:299
Rayforstia Rix & Harvey 2010:55
Rayforstia antipoda (Forster 1959:288)
Rayforstia insula (Forster 1959:283)
Rayforstia mcfarlanei (Forster 1959:289)
Rayforstia plebeia (Forster 1959:290)
Rayforstia propinqua (Forster 1959:285)
Rayforstia salmoni (Forster 1959:290)
Rayforstia scuta (Forster 1959:293)
Rayforstia signata (Forster 1959:283)
Rayforstia vulgaris* (Forster 1959:286) **Figs 19.1–4
CA *Rayforstia wisei* (Forster 1964b:95)
Taliniella Rix & Harvey 2010:72
**Taliniella nigra* (Forster 1959:279)
Taliniella vinki Rix & Harvey 2010:73
Tinytrella Rix & Harvey 2010:74
**Tinytrella pusilla* (Forster 1959:294)



19.1 *Rayforstia vulgaris* (Forster 1959)



19.2

19.3

19.4

Holarchaeidae

Diversity

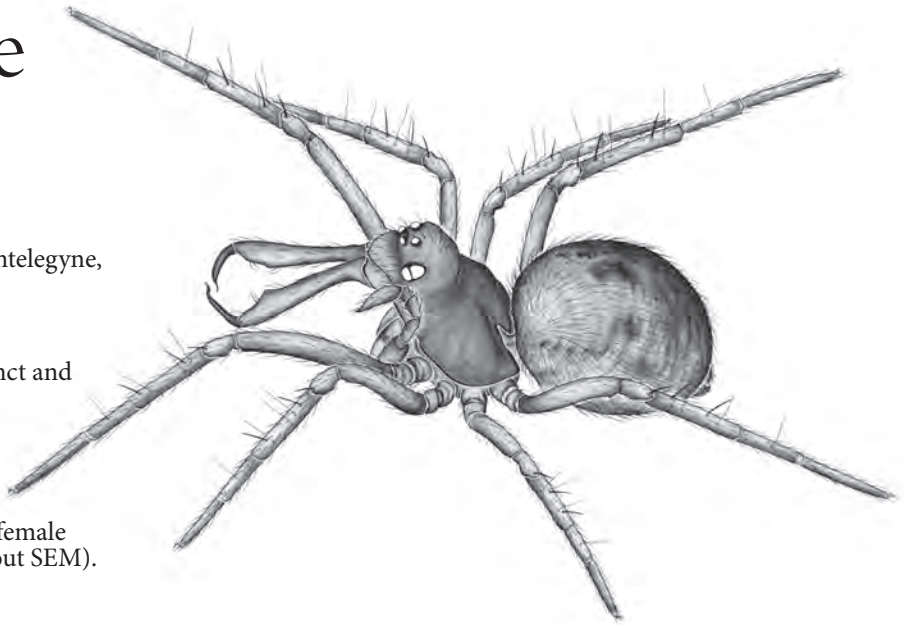
1 genus, 1 species.

Summary description

Minute araneomorphs (0.8–1.5 mm), entelegyne, ecribellate, 3 claws, 8 eyes.

Diagnosis

Elongate chelicerae arising from a distinct and ventrally unsclerotised foramen of the cephalothorax (Fig. 20.1, 20.5); chelicerae without peg teeth (difficult to see without SEM); swollen clypeus (Fig. 20.5); spherical abdomen (Fig. 20.1) fangs without openings and female palp without claw (difficult to see without SEM).



20.1 *Holarchaea novaeseelandiae* (Forster 1949)

Similar families

Pararchaeidae have peg teeth on the chelicerae (absent in Holarchaeidae); broadly oval abdomen (spherical in Holarchaeidae); ventrally sclerotised foramen (unsclerotised in Holarchaeidae). **Mecysmaucheniidae** have only 2 obvious spinnerets (Holarchaeidae have 6 spinnerets); presence of peg teeth on chelicerae (absent in Holarchaeidae).

Taxonomic note

At least five undescribed species are suspected to occur in New Zealand (P.J. Sirvid, pers. comm.; M.G. Rix, pers. comm.).

Key references

Forster 1949, 1955b, Forster & Platnick 1984, Rix 2005.

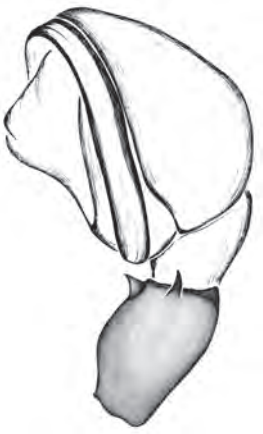
Endemicity, habitat and distribution

The genus is endemic to Tasmania and New Zealand (Rix 2005). Holarchaeidae are usually found in mosses and litter in wet rainforests, but they are also known from litter at the base of tussock in grassland (Forster & Platnick 1984). Forster (1949) reported that some specimens were beaten from bushes and moss on trees. They are apparently associated with habitats that have a constant and high humidity. *Holarchaea novaeseelandiae* has been reported from a few localities on the west coast of the South Island (Forster 1949), Orongorongo Valley, Akatarawa and Queen Charlotte Sound (B.M. Fitzgeralg, pers. comm.).

Species list

HOLARCHAEIDAE Forster & Platnick 1984:71
Holarchaea Forster 1955b:392
Holarchaea novaeseelandiae* (Forster 1949:200) **Figs 20.1–4

20.2



20.3

20.5

20.4

Pararchaeidae

Diversity

3 genera, 3 species.

Summary description

Minute to small araneomorphs (1.5–2.4 mm), ecribellate, entelegyne, 3 claws, 8 eyes.

Diagnosis

Robust chelicerae arising from a distinct, ventrally sclerotised foramen of the cephalothorax (Fig. 21.1); presence of stout peg teeth on the distal prolateral chelicerae (best seen with SEM); posterior margin of the *pars cephalica* procurved (Fig. 21.1); 6 spinnerets.

Similar families

Holarchaeidae have a spherical abdomen (broadly oval in Pararchaeidae); no peg teeth on the chelicerae (present in Pararchaeidae). **Mecysmaucheniidae** have only 2 obvious spinnerets (Pararchaeidae have 6 spinnerets).

Taxonomic notes

The discovery of additional species is possible in New Zealand, but seems unlikely (M.G. Rix, pers. comm.). The males of many Australian species have a dorsal scutum, but it is absent from the two New Zealand species. The male of *Ozarchaea forsteri* is unkown.

Key references

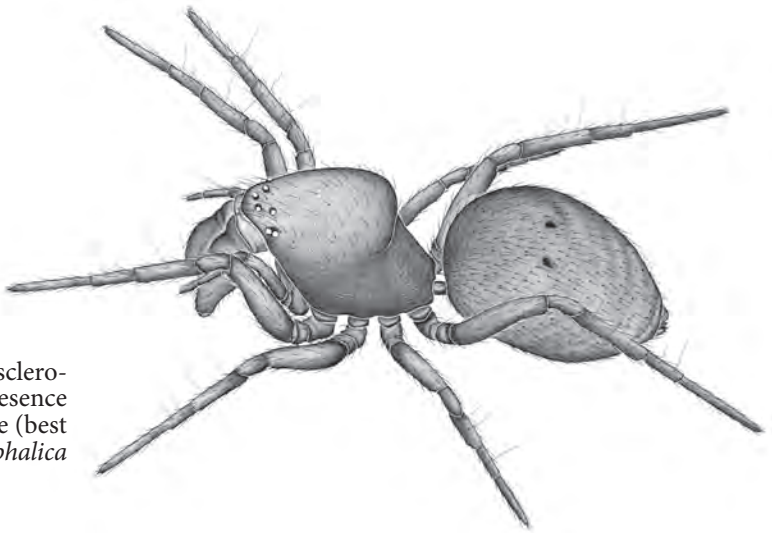
Forster & Platnick 1984, Rix 2005, 2006.

Endemicity, habitat and distribution

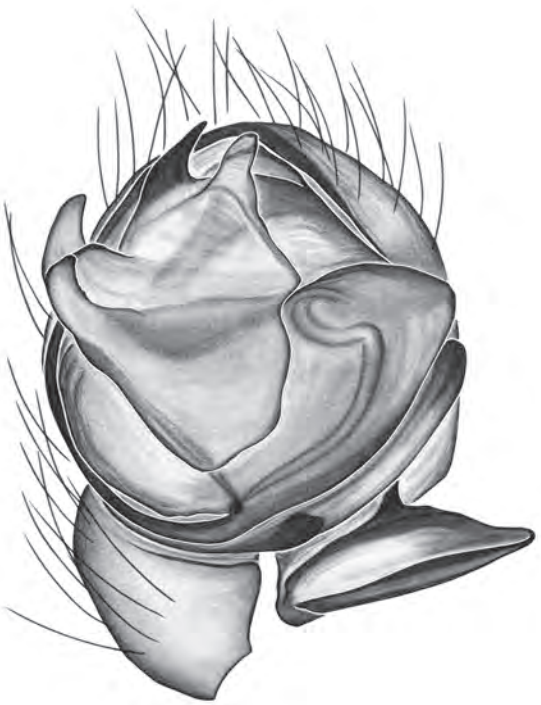
Forstrarchaea and *Pararchaea* are endemic, monotypic genera. *Ozarchaea* is known from several species in Australia, but *Ozarchaea forsteri* is endemic to New Zealand. Pararchaeidae are known from humid microhabitats in forested regions, where they live in moss and thick leaf litter (Rix 2006). *Forstrarchaea rubra* is found in the northern half of the North Island while *P. alba* lives in the southern half of the North Island and the South Island. *Ozarchaea forsteri* is known only from Mount Egmont National Park (North Island) where it was collected above 1000 metres.

Species list

PARARCHAEIDAE Forster & Platnick 1984:65
- *Forstrarchaea* Rix 2006:221
  - **Forstrarchaea rubra* (Forster 1949:197)
- *Ozarchaea* Rix 2006:225
  - *Ozarchaea forsteri* Rix 2006:228
- *Pararchaea* Forster 1955b:397
  - **Pararchaea alba* Forster 1955b:399 **Figs 21.1–4**



21.1 *Pararchaea alba* FORSTER 1955



21.2

21.3

21.4

Mecysmaucheniidae

Diversity

2 genera, 3 species.

Summary description

Minute to small araneomorphs (1.5–3 mm), ecribellate, secondarily haplogyne, 3 claws, 8 eyes.

Diagnosis

Elongated chelicerae (Fig. 22.4) originating from the foramen of the carapace (Fig. 22.1); posterior margin of the *pars cephalica* procurved (Fig. 22.1); only 2 obvious spinnerets visible (Fig. 22.3).

Similar families

Holarchaeidae and **Pararchaeidae** also have chelicerae that originate from the foramen of the carapace, but have 6 spinnerets (only 2 obvious spinnerets in Mecysmaucheniidae); entelegyne (Mecysmaucheniidae are secondarily haplogyne).

Taxonomic note

Based on information contained in an unfinished manuscript by Forster, there are 13 additional species (R.J. Raven, pers. comm.).

Additional note

Some Chilean members of the family have six eyes.

Key references

Wilton 1946, Forster 1955b, Forster & Platnick 1984.

Endemicity, habitat and distribution

Aotearoa and *Zearchaea* are both endemic genera. Mecysmaucheniidae are associated with native forests and are usually found by extraction of mosses and leaf litter and pitfall trapping. *Aotearoa magna* is associated with beech forests in Fiordland (South Island), *Zearchaea clypeata* is known from the southern portion of the North Island and around Canterbury (South Island), while *Zearchaea fiordensis* is found in Fiordland and other localities in the South Island.

Species list

MECYSMAUCHENIIDAE: Simon 1895a:935

Mecysmaucheniinae Simon 1895a:935

Aotearoa Forster & Platnick 1984:63

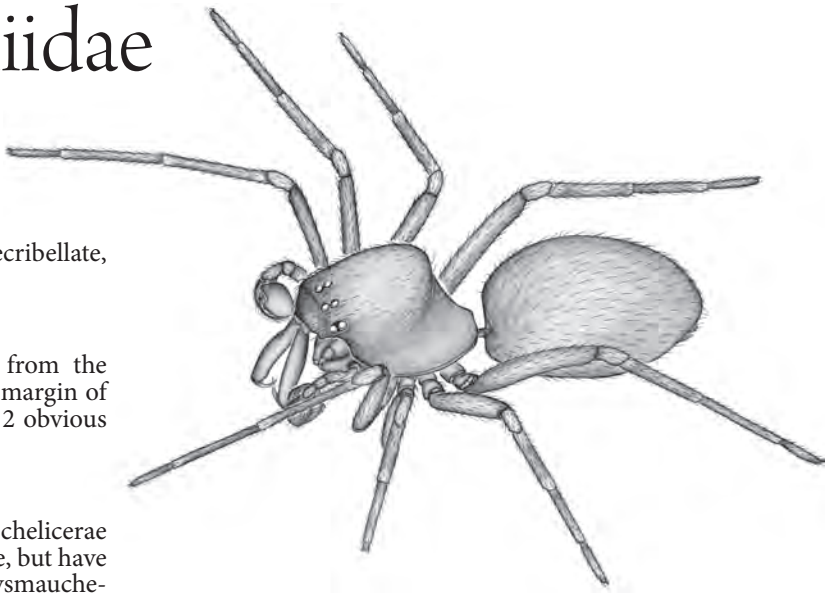
**Aotearoa magna* (Forster 1949:193)

Zearchaeinae Forster & Platnick 1984:64

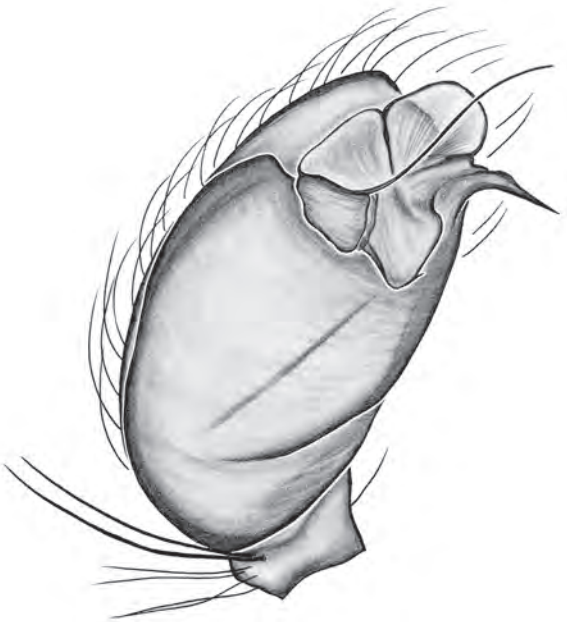
Zearchaea Wilton 1946:19

Zearchaea clypeata* Wilton 1946:21 **Figs 22.1–4

Zearchaea fiordensis Forster 1955b:395

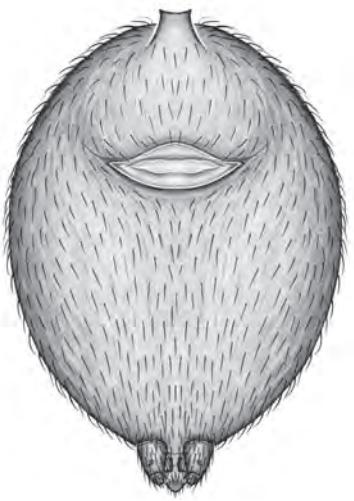


22.1 *Zearchaea clypeata* Wilton 1946



22.2

22.4



22.3

Deinopidae

Diversity

1 genus, 1 species.

Summary description

Large to very large araneomorphs (20–24 mm), cribellate, entelegyne, 3 claws, 8 eyes.

Diagnosis

Greatly enlarged posterior median eyes (PME) (Fig. 23.2); femur I of female with proximal, prolateral bump (Fig. 23.3); males have a notch on tarsus I.

Similar families

No other families have a similar eye arrangement but **Salticidae** have enlarged anterior median eyes (AME). ***Tetragnatha*** (Tetragnathidae) have elongated legs but no enlarged eyes.

Taxonomic notes

The only species known is an introduction from Australia. Given the large size of the members of this family, there are unlikely to be any undiscovered endemic Deinopidae, but the possibility of additional introductions remains.

Key reference

Davies 1988b.

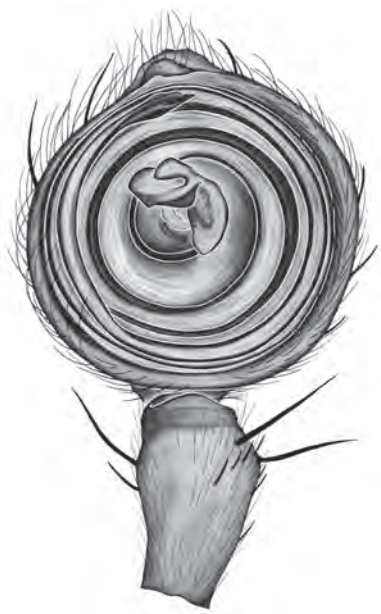
Endemicity, habitat and distribution

Deinopis subrufa is known from Australia. These spiders live in low vegetation, and construct a small expandable web that they hold between their front legs and cast over prey (Jocqué & Dippenaar-Schoemann 2006). In New Zealand, they have been collected in dry, sparsely forested habitats in the north of the North Island (Forster & Forster 1999).

Species list

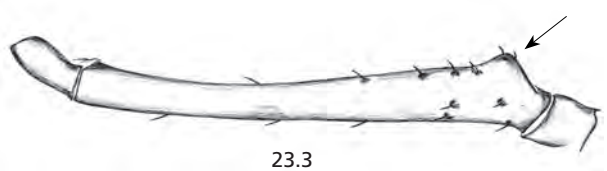
DEINOPIDAE C.L. Koch 1850:41
Deinopis MacLeay 1839:9
[RnE] *Deinopis subrufa* L. Koch 1879a:1039 **Figs 23.1, 3–5**

23.1 *Deinopis subrufa* L. Koch 1879

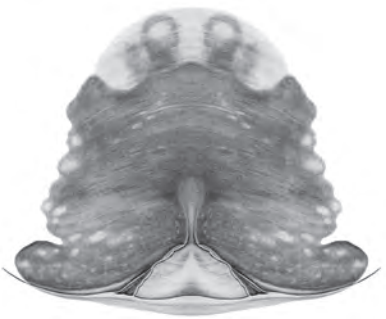


23.4

23.2

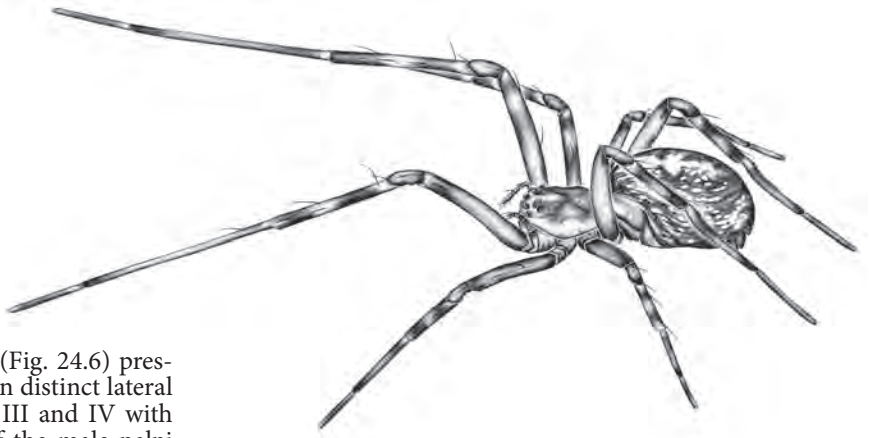


23.3



23.5

Uloboridae



24.1 *Waitkera waitakerensis* (Chamberlain 1946)

Diversity

1 genus, 1 species.

Summary description

Small araneomorphs (3–5 mm), entelegyne, cribellate, 3 claws, 8 eyes.

Diagnosis

Cribellum (Fig. 24.4) and calamistrum (Fig. 24.6) present; females with posterior lateral eyes on distinct lateral tubercles (Fig. 24.5); femora of legs II, III and IV with long trichobothria (Fig. 24.8); coxae of the male palpi with stridulating file (Fig. 24.7).

Similar families

Araneidae differ by the absence of cribellum and calamistrum (present in Uloboridae).

Taxonomic note

The discovery of additional species is possible, but seems unlikely (B.D. Opell, pers. comm.).

Key references

Opell 1979, 2006, Opell *et al*. 2007b.

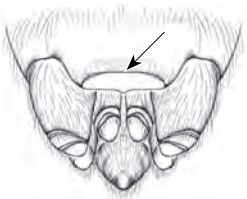
Endemicity, habitat and distribution

This monotypic genus is endemic to New Zealand. *Waitkera waitakerensis* is usually found in forests where it constructs horizontal orb-webs in understory vegetation. Several populations were also found associated with the cool, shaded rock crevices and karstic features of the Waro formation (Opell 2006). The species is restricted to the North Island (Opell 2006).

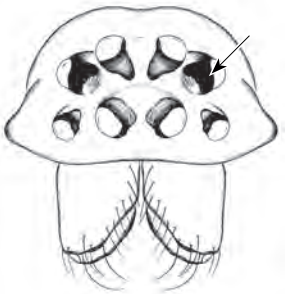
Species list

ULOBORIDAE Thorell 1869:64
Waitkera Opell 1979:476
Waitkera waitakerensis* (Chamberlain 1946:90) **Figs 24.1–7

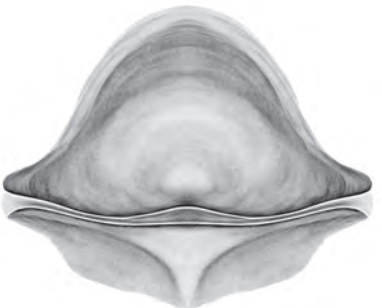
24.2



24.4

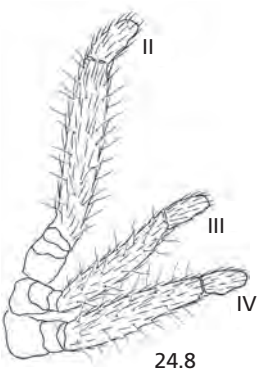


24.5

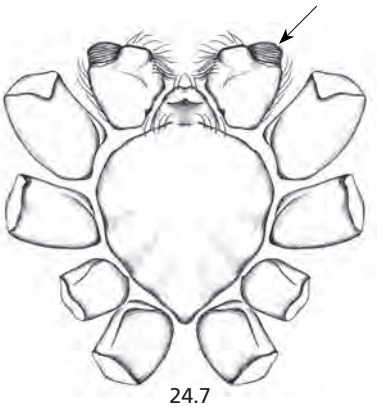


24.3

24.6



24.8



24.7

Araneidae

Diversity

16 genera, 33 species.

Summary description

Minute to large araneomorphs (1.5–19.4 mm), entelegyne, ecribellate, 3 claws, 8 eyes.

Diagnosis

Lateral eyes widely separated from median eyes (Figs 25.1, 25.6); male palp with median apophysis (Figs 25.2, 25.4, 25.7); epigynum of most species with a distinct scape (Figs 25.3, 25.5, 25.8).

Similar families

Tetragnathidae have elongate endites, widest at the distal edge (square endites in Araneidae); male palp without median apophysis (median apophysis present in Araneidae). **Mysmenidae** are much smaller in size (1–2 mm) (> 3 mm for Araneidae, except for males of a few species); have ventral, subapical, sclerotised spot on leg I (absent in Araneidae). **Theridiosomatidae** have a pair of anterior sternal pits (absent in Araneidae).

Taxonomic notes

Araneidae have highly variable colour patterns and this intraspecific variation was not recognised by early arachnologists, resulting in many synonymies. There is pronounced sexual dimorphism: males are often much smaller than females and can have different colouration. The subfamily Araneinae was reviewed by Court & Forster (1988) and numerous nomenclatural issues were resolved. The male of *Arachnura feredayi* is still undescribed. There is at least one unreported/undescribed species of *Cyrtophora* from the South Island and it is likely that additional taxa will be discovered.

Key references

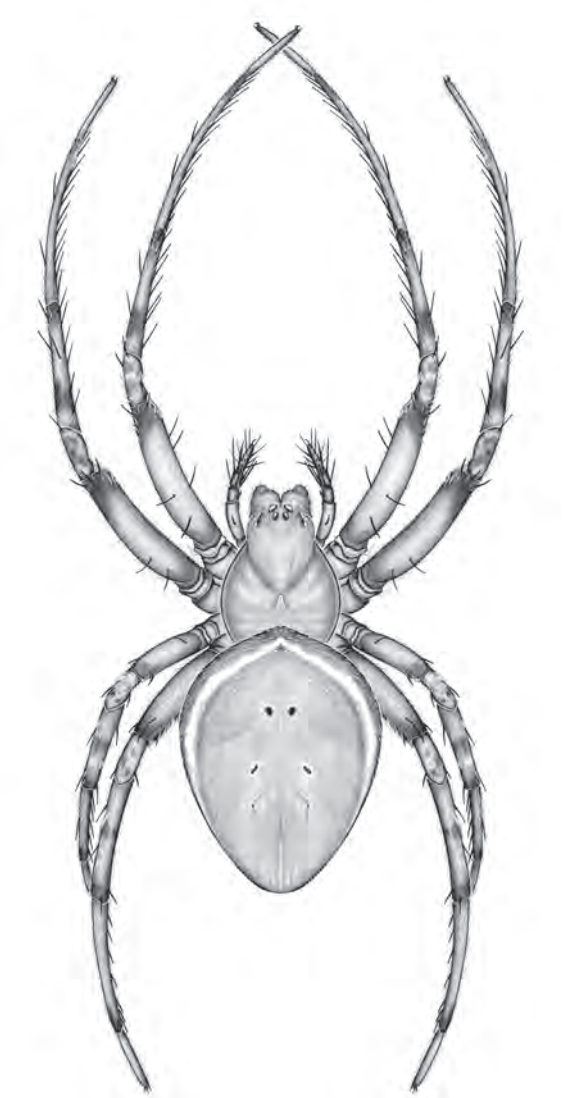
Court & Forster 1988, Davies 1988b, Paquin *et al.* 2008d, Framenau *et al.* 2010.

Endemicity, habitat and distribution

Due to their ability to disperse by ballooning, many Araneidae found in New Zealand are thought naturally introduced from Australia (*Acroaspis decorosa*, *Arachnura feredayi, Backobourkia brounii, Celaeniua atkinsoni, Cyclosa trilobata, Eriophora pustulosa*) or Australasia (*Argiope protensa*). *Zygiella x-notata* is associated with human activities and found in Europe, North America and the Neotropics. However, most species and genera listed below are endemic to New Zealand. They typically spin vertical orb webs in open habitat among the vegetation, in subalpine scrub, or in native forest habitat. Widespread in New Zealand.

Classification and nomenclature notes

Zygiella has been previously included in Tetragnathidae and New Zealand specimens of *Zygiella x-notata* had previously been recorded as *Meta segmentata* (Andrew 1999). The synonymy of four species included in *Araneus* proposed by Court & Forster (1988) was recently reaffirmed and these species are currently placed in *Zealaranea* and *Novaranea* (Paquin *et al.* 2008d). The records of *Araneus brisbanae* (L. Koch 1867) from New Zealand are misidentifications of *Acroaspis decorosa* (Paquin *et al.* 2008d). *Novaranea laevigata* (Urquhart 1891a) is a junior synonym of *Novaranea queribunda* (Framenau *et al.* 2009). Specimens from New Zealand previously identified as *Eriophora heroine* (L. Koch 1871) are *Backobourkia brounii* (Framenau *et al.* 2010). *Eriophora decorosa* was transfered to *Acroaspis* and *Eriophora pustulosa* belongs to an undescribed Australian genus (Framenau *et al.* 2010).

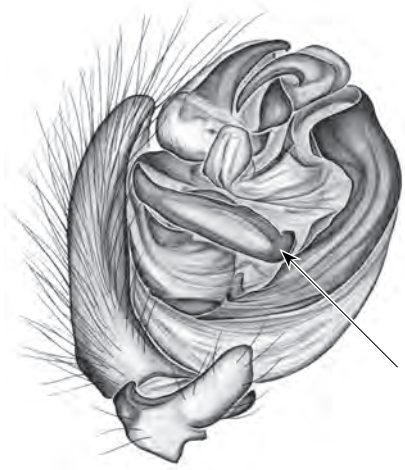


25.1 *Colaranea viriditas* (L. Koch 1872)

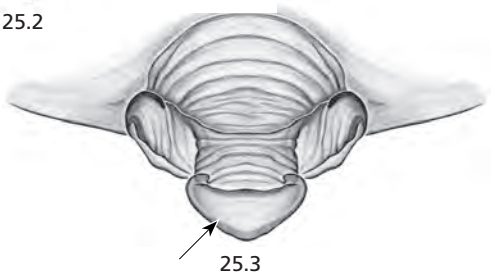
Species list

ARANEIDAE Clerck 1758:22
- *Acroaspis* Karsch 1878c:807
  - [NI] *Acroaspis decorosa* (Urquhart 1894:212)
- *Arachnura* Vinson 1863:287
  - [NI] *Arachnura feredayi* (L. Koch 1872a:122) **Fig 25.6**
- *Argiope* Audouin 1826:328
  - [NI] *Argiope protensa* L. Koch 1872a:211
- *Backobourkia* Framenau *et al.* 2010:89
  - [NI] *Backobourkia brounii* (L. Koch 1871:51) **Figs 25.7–8**
- *Celaenia* Thorell 1868b:2
  - [NI] *Celaenia atkinsoni* (O. Pickard-Cambridge 1879d:699)
  - [AI] *Celaenia excavata* (L. Koch 1867b:175)
  - *Celaenia hectori* (O. Pickard-Cambridge 1879d:700)
  - *Celaenia olivacea* (Urquhart 1885:39)
  - *Celaenia penna* (Urquhart 1887:94)
  - *Celaenia tuberosa* (Urquhart 1889a:149)
- *Colaranea* Court & Forster 1988:76
  - *Colaranea brunnea* Court & Forster 1988:81
  - *Colaranea melanoviridis* Court & Forster 1988:81
  - *Colaranea verutum* (Urquhart 1887:87)
  - **Colaranea viriditas* (Urquhart 1887:85) **Figs 25.1–3**
- *Cryptaranea* Court & Forster 1988:82
  - *Cryptaranea albolineata* (Urquhart 1893a:1978)
  - *Cryptaranea atrihastula* (Urquhart 1891a:162)
  - **Cryptaranea invisibilis*(Urquhart 1892b:239)
  - *Cryptaranea stewartensis* Court & Forster 1988:89
  - *Cryptaranea subalpina* Court & Forster 1988:89
  - *Cryptaranea subcompta* (Urquhart 1887:83)
  - *Cryptaranea venustula* (Urquhart 1891a:165)
- *Cyclosa* Menge 1866:73
  - [NI] *Cyclosa trilobata* (Urquhart 1885:37)
- *Eriophora* Simon 1864:261

[NI] *Eriophora pustulosa* (Walckenaer 1841:132) **Figs 25.4–5**
Neoscona Simon 1864:261
Neoscona orientalis (Urquhart 1887:79)
Novakiella Court & Forster *in* Platnick 1993c:457
[NI] **Novakiella trituberculosa* (Roewer 1942a:834)
Novaranea Court & Forster 1988:114
**Novaranea queribunda* (Keyserling 1887a:195)
Poecilopachys Simon 1895a:880
[AI] **Poecilopachys australasia* (Griffith & Pidgeon *in* Griffith 1833:pl. 3, f. 1)
Prasonica Simon 1895a:794
Prasonica plagiata (de Dalmas 1917a:378)
Zealaranea Court & Forster 1988:70
**Zealaranea crassa* (Walckenaer 1841:127)
Zealaranea prina Court & Forster 1988:74
Zealaranea saxitalis (Urquhart 1887:82)
Zealaranea trinotata (Urquhart 1890c:247)
Zygiella F.O. Pickard-Cambrdige 1902d:15
[AI] *Zygiella x-notata* (Clerck 1758:46)

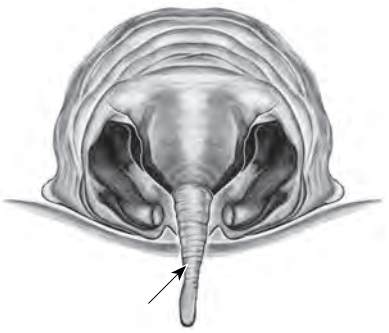


25.2

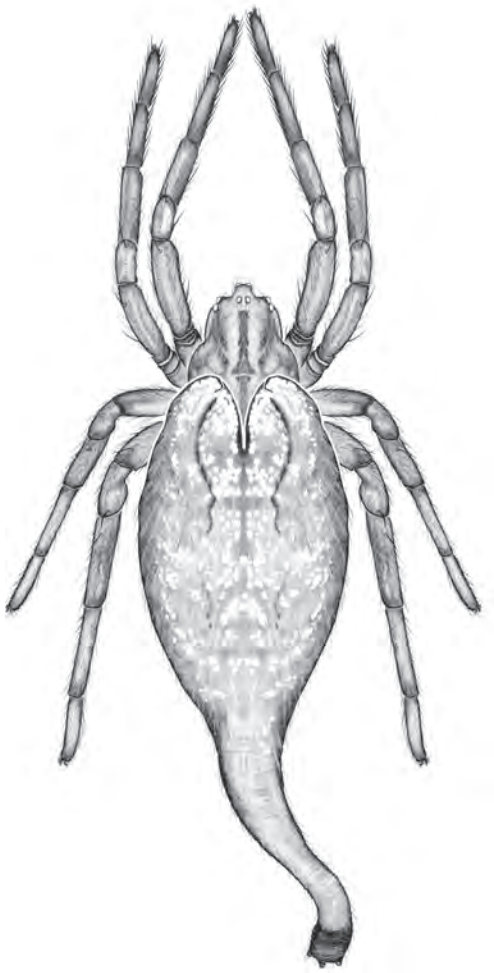


25.3

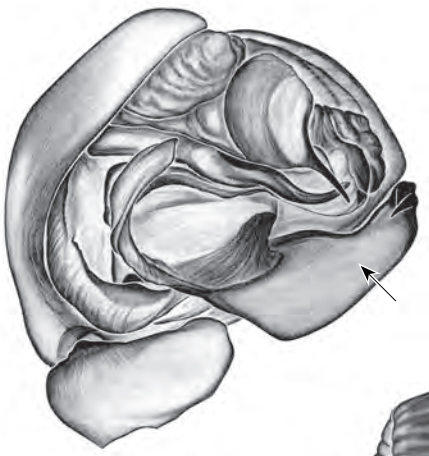
25.4



25.5



25.6



25.7

25.8

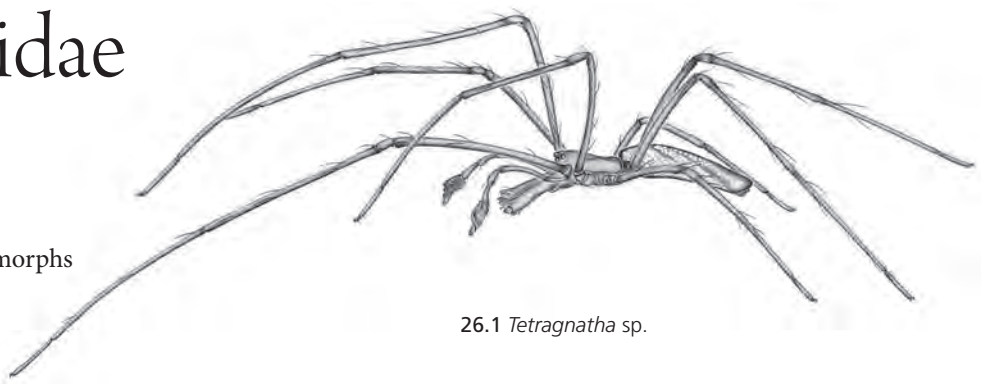
Tetragnathidae

Diversity

6 genera, 9 species.

Summary description

Small to medium-sized araneomorphs (2.8–8.0 mm), ecribellate, entelegyne or secondarily haplogyne, 3 claws, 8 eyes.



26.1 *Tetragnatha* sp.

Diagnosis

Legs elongated (Figs. 26.1); epigynum reduced (Figs 26.7–8), at most a swelling in *Tetragnatha* (Fig. 26.4); male palpus relatively simple and without median apophysis (Figs. 26.2, 26.6).

Similar families

Araneidae have square or rectangular endites (elongate, widest at distal edge in Tetragnathidae); epigynum tridimensional (reduced or absent in Tetragnathidae); palp with median apophysis (absent in Tetragnathidae). **Pholcidae** have eyes in triads (not in triads in Tetragnathidae).

Taxonomic notes

New Zealand Tetragnathidae are badly in need of taxonomic attention, as most species were described more than a century ago and can hardly be recognised. Additionally, 9 undescribed species are suspected to occur in New Zealand (R.J. Raven, pers. comm.). Forster & Forster (1999) considered that some species endemic to New Zealand and Australia formed a distinct family, the Nanometidae. Álvarez-Padilla *et al.* (2009) provided support for the monophyly of this clade, the "*Nanometa* clade" treated here as a subfamily.

Key references

Okuma 1987, Forster & Forster 1999, Álvarez-Padilla *et al.* 2009.

Endemicity, habitat and distribution

Eryciniolia is a monotypic, endemic genus. *Leucauge dromedaria* and *Nanometa gentilis* are possibly natural introductions from Australia. *Tetragnatha nitens* has a cosmotropical distribution and is found in the North Island; however, molecular phylogenetic evidence suggests this species may be a paraphyletic assemblage of several different species (Gillespie *et al.* 2008). The incomplete taxonomic coverage of this family limits our knowledge of habitat affinities and statements about their distribution. However, *Tetragnatha* spp. are known to spin horizontal orb webs near water, particularly in swamps and in native forest. *Meta* spin vertical orb webs, but according to Forster & Forster (1999), *Eryciniolia purpurapunctata*, *Orsinome lagenifera* and *Nanometa gentilis* spin horizontal orb webs over water or the forest floor. *Orsinome lagenifera* is associated with shady streams.

Classification and nomenclature notes

Zygiella x-notata has been considered to belong in Tetragnathidae, but is currently placed in Araneidae. Álvarez-Padilla *et al.* (2009) examined the relationships within the family and proposed a classification in subfamilies that is followed here.

Species list

TETRAGNATHIDAE Menge 1866:90
Tetragnathinae Menge 1866:90
Tetragnatha Latreille 1804b:135
Tetragnatha flavida Urquhart 1891a:177
Tetragnatha multipunctata Urquhart 1891a:176
Tetragnatha nigricans de Dalmas 1917a:368
[NI] *Tetragnatha nitens* Audouin 1826:323
Leucauginae di Caporiacco 1955:318
Leucauge Darwin *in* White 1841:473
[NI] *Leucauge dromedaria* (Thorell 1881:128) **Figs 26.6–7**
Metainae Álvarez-Padilla *et al.* 2009:139
Meta C.L. Koch *in* Herrich-Shäffer 1835:134.2
Meta rufolineata (Urquhart 1889a:137)
Nanometinae Forster & Forster 1999:166
Eryciniolia Strand 1912b:346
**Eryciniolia purpurapunctata* (Urquhart 1889a:134)
Nanometa Simon 1908d:421
[NI] **Nanometa gentilis* (Simon 1908d:421)
Orsinome Thorell 1890a:209
Orsinome lagenifera (Urquhart 1888:111)

Undetermined / undescribed taxa

Meta sp. **Fig. 26.8**
Tetragnatha sp. a **Figs 26.1–3**
Tetragnatha sp. b **Figs 26.4–5**

26.2

26.3

26.4

26.5

26.6

26.7

26.8

Nephilidae

Diversity

1 genus, 1 species.

Summary description

Large females (22 mm, Fig. 27.1a), small males (3–4 mm, Fig. 27.1b), araneomorphs, entelegyne, ecribellate, 3 claws, 8 eyes.

Diagnosis

Rectangular and somewhat elongated abdomen (Fig. 27.1); large females (≥ 22 mm); male palp with an embolic conductor 2–3 times the length of the cymbium (Figs 27.2–27.3); cheliceral condyle (boss) with a fine scale ornamentation (reduced in males) (best seen with SEM).

Similar families

Tetragnathidae in the genus *Tetragnatha* have rectangular abdomens, but are smaller (Nephilidae are large); convergent endites (divergent in Nephilidae); enlarged chelicerae (not enlarged in Nephilidae); male palp with elongated conductor about the same length as the cymbium (embolic conductor 2–3 times the length of the cymbium in Nephilidae).

Taxonomic notes

Males and females of the genus show extreme sexual dimorphism; males are approximately 10% the size of females (Fig. 27.1a, b). Australasian members of *Nephila* were revised by Harvey *et al*. (2007) and the only species reported from New Zealand is *Nephila edulis*. The discovery of endemic Nephilidae is unlikely given the size of the females. However, additional introduced species are possible given the high dispersal capacity suggested by little or no genetic divergence between populations separated by 2000 kilometres (Harvey *et al*. 2007). Kuntner (2006) proposed a proper terminology for the morphological features of the male palp.

Key reference

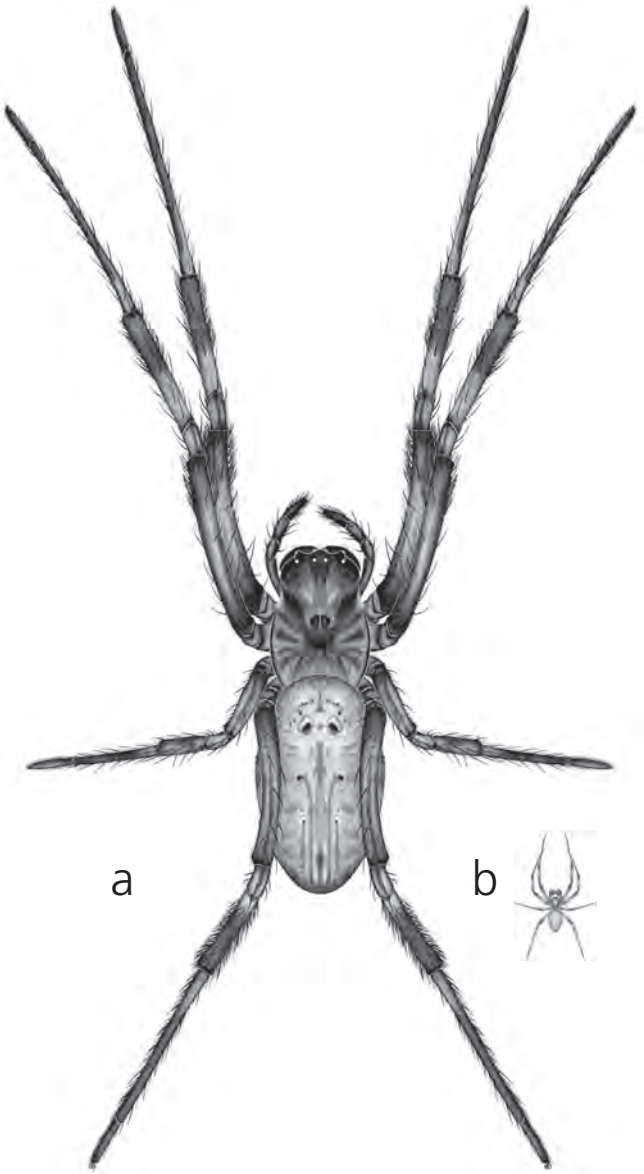
Harvey *et al*. 2007.

Endemicity, habitat and distribution

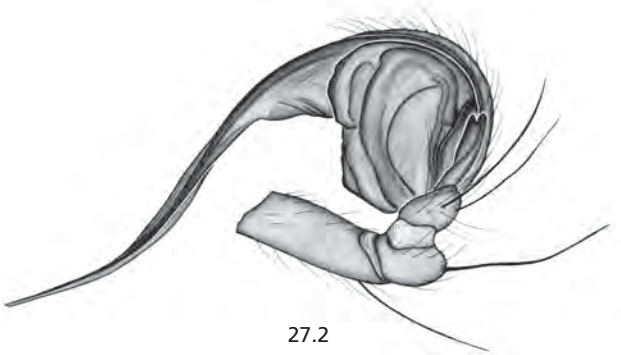
Nephila edulis is probably introduced from Australia, where the species is abundant and widespread. It is known from the North Island and the top of the South Island. Males have not been found in New Zealand and females have not produced viable eggsacs. This species is found throughout Australia (Harvey *et al*. 2007) and they build large orb webs, up to 1.5 metres wide (Forster & Forster 1999, Kuntner & Coddington 2009).

Species list

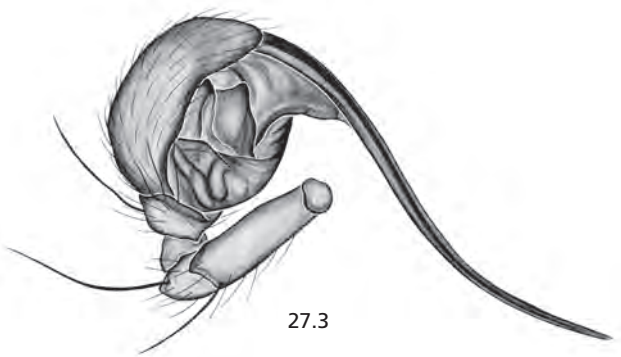
NEPHILIDAE Simon 1894a:744
Nephila Leach 1815:133
[NI] *Nephila edulis* (Labillardière 1799:239) **Figs 27.1–4**



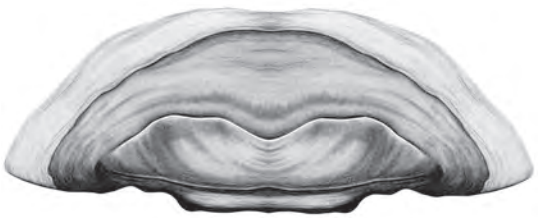
27.1 *Nephila edulis* (Labillardière 1799). a) female, b) male



27.2



27.3



27.4

Theridiosomatidae

Diversity

Unknown; no New Zealand species described yet.

Summary description

Minute to small araneomorphs (1–3 mm), entelegyne, ecribellate, 3 claws, 8 eyes.

Diagnosis

Sternum broadly truncate with a pair of anterior sternal pits (Fig. 28.4); presence of long dorsal trichobothria on tibias III and IV (Fig. 28.5); abdomen globular; mature males have very large palps.

Similar families

Araneidae are usually larger and lack the anterior sternal pits (Theridiosomatidae are small (1–3 mm), with a pair of anterior sternal pits). **Mysmenidae have ventral, subapical, sclerotised spots on at least leg I (absent in Theridiosomatidae); male metatarsus I usually with a clasping spur (absent in Theridiosomatidae). **Theridiidae** usually have a row of lightly curved, serrated bristles on tarsi IV (absent in Theridiosomatidae); no anterior sternal pits (present in Theridiosomatidae).

Taxonomic notes

At least nine undescribed species (P.J. Sirvid, pers. comm.), some of which belong in the genus *Baalzebub*.

Key references

Coddington 1986a, 2005c, Forster & Forster 1999, Jocqué & Dippenaar-Schoemann 2006.

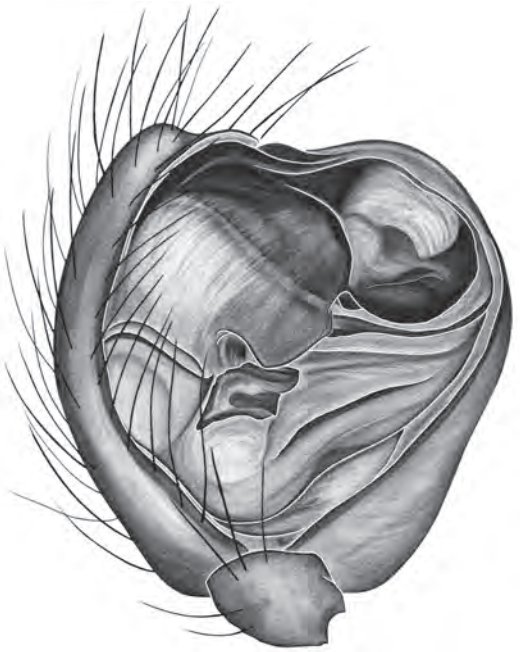
Endemicity, habitat and distribution

New Zealand Theridiosomatidae have never been studied, therefore very little is known about their habitat and distribution. They are assumed to build a typical vertical orb-web in shady forests, recognisable by its hub reduced to a few lines. Theridiosomatidae use a tension line, which they release to slam the web against a potential prey, improving its efficiency (Coddington 2005c).

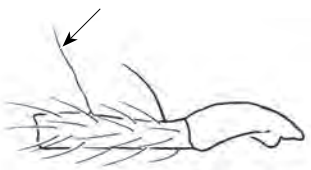
Species list

THERIDIOSOMATIDAE Simon 1881a:24
Undetermined / undescribed taxa
Baalzebub Coddington 1986a:71
Baalzebub sp. a **Figs 28.1, 3**
Baalzebub sp. b **Fig. 28.2**

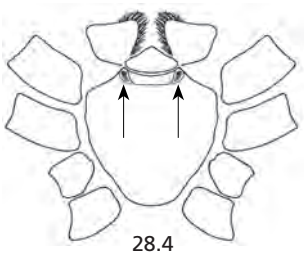
28.1 *Baalzebub* sp.



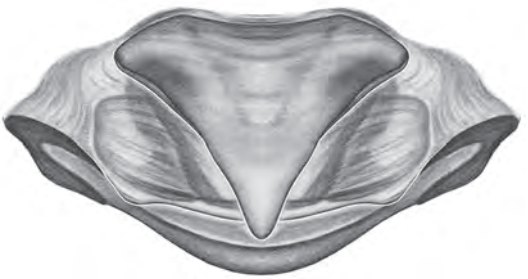
28.2



28.5



28.4



28.3

Mysmenidae

Diversity

No New Zealand species have been formally described, but at least one species has been illustrated and tentatively assigned to *Trogloneta* (Forster 1967:13).

Summary description

Minute to small araneomorphs (1–2 mm), ecribellate, entelegyne, 3 claws, 8 eyes.

Diagnosis

A ventral, subapical, sclerotised spot is present on at least leg I, and sometimes leg II (Fig. 29.4), male metatarsus I usually with a clasping spur (Fig. 29.5).

Similar families

Anapidae have a higher degree of sclerotisation; males have dorsal scutum (absent in Mysmenidae); females without palp (palp present in Mysmenidae). **Theridiosomatidae** have a pair of anterior sternal pits (absent in Mysmenidae). **Araneidae** are usually larger; without ventral, subapical, sclerotised spot on leg I (present in Mysmenidae).

Taxonomic notes

At least 16 undescribed species are suspected (P.J. Sirvid, pers. comm.), some species likely belong in *Trogloneta* and *Mysmena* (Forster & Forster 1999, L. Lopardo, pers. comm.).

Key references

Forster & Forster 1999, Lopardo & Coddington 2005.

Endemicity, habitat and distribution

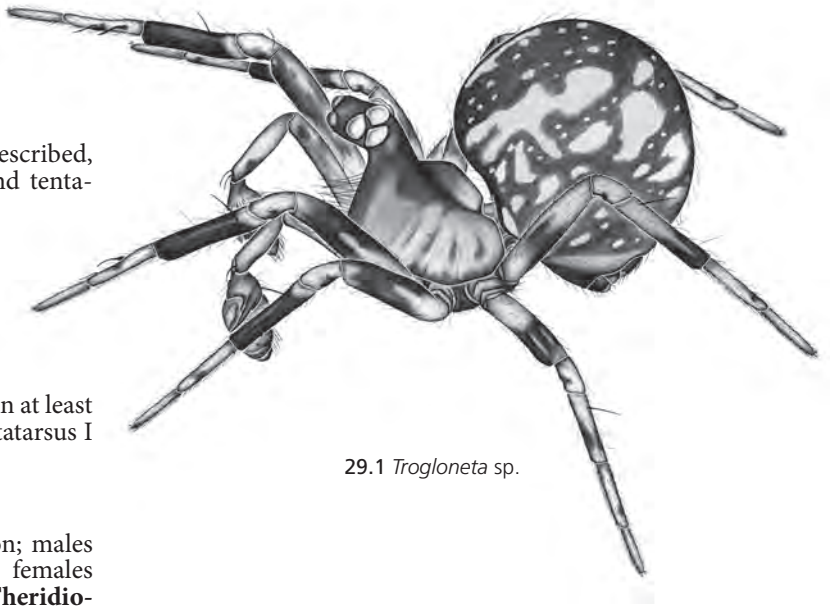
Very little is known about New Zealand Mysmenidae as no species have been described yet. However, Forster & Forster (1999) reported that they are usually found on the forest floor and among the litter at the base of tussocks in open country.

Classification and nomenclature notes

The only New Zealand species documented so far (see the habitus in Forster 1967), was assigned to *Trogloneta*, which was previously included in Symphytognathidae.

Species list

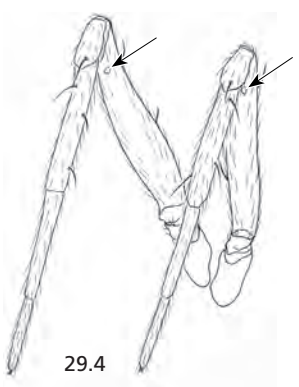
MYSMENIDAE Petrunkevitch 1928a:115
Undetermined / undescribed taxa
Mysmena Simon 1894a:558
Mysmena sp.
Trogloneta Simon 1922:200
Trogloneta sp. a **Figs 29.1, 2**
Trogloneta sp. b **Fig. 29.3**



29.1 *Trogloneta* sp.

29.2

29.5



29.4

29.3

Anapidae

Diversity

3 genera, 13 species.

Summary description

Minute araneomorphs (0.7–1.4 mm), secondarily haplogyne, ecribellate, 3 claws, 6 or 8 eyes.

Diagnosis

Males with a dorsal scutum [rounded in *Novanapis* and *Zealanapis* (Fig. 30.2) or deeply incised anteriorly in *Paranapis* (Fig. 30.1)]; female without palpi; presence of a sclerotised labral spur (best seen with SEM, Fig. 30.3); presence of a pore bearing depression on the anterolateral margins of the carapace (only seen with SEM). Females have a secondarily haplogyne condition, e.g. no surface expression of the genitalia (Fig. 30.7). Females are best identified by their internal genitalia.

Similar families

Mysmenidae and **Theridiosomatidae** males do not have a scutum (present in Anapidae). **Micropholcommatidae** have a smooth sternum (punctuated in Anapidae); all legs subequal (legs I and II longer in Anapidae). **Theridiidae** (*Pholcomma*) have a comb on tarsus IV (absent in Anapidae). For females, all families differ by the presence of palpi (absent in Anapidae).

Taxonomic notes

The female of *Zealanapis otago* is unknown. Based on molecular phylogenetic analysis and the occurrence of the labral spur in both Anapidae and Micropholcommatidae, Rix *et al*. (2008) concluded that Anapidae, as currently defined, are not monophyletic.

Key references

Forster 1951, Platnick & Forster 1989, Rix *et al*. 2008.

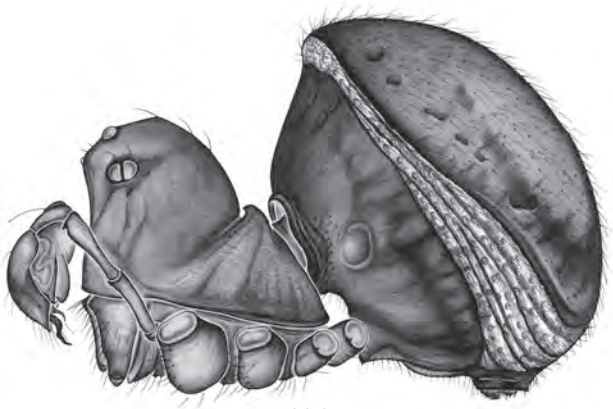
Endemicity, habitat and distribution

New Zealand taxa are endemic at both generic and specific levels. Anapidae are associated with the native forest floor, and usually found among moss and litter (Forster & Forster 1999) where they apparently spin small orb webs. Most species have restricted distributions in either of the South Island or the North Island, but *Novanapis spinipes* and *Zealanapis armata* are widespread on both main islands.

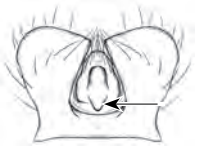
Species list

ANAPIDAE Simon 1895a:923
- *Novanapis* Platnick & Forster 1989:55
  - **Novanapis spinipes* (Forster 1951:239) **Figs 30.2–3**
- *Paranapis* Platnick & Forster 1989:60
  - **Paranapis insula* (Forster 1951:242) **Figs 30.1, 4–6**
  - *Paranapis isolata* Platnick & Forster 1989:61
- *Zealanapis* Platnick & Forster 1989:42
  - **Zealanapis armata* (Forster 1951:232)
  - *Zealanapis australis* (Forster 1951:234)
  - *Zealanapis conica* (Forster 1951:237)
  - *Zealanapis insula* Platnick & Forster 1989:54
  - *Zealanapis kuscheli* Platnick & Forster 1989:54
  - *Zealanapis matua* Platnick & Forster 1989:52
  - *Zealanapis montana* Platnick & Forster 1989:50
  - *Zealanapis otago* Platnick & Forster 1989:50
  - *Zealanapis punta* Platnick & Forster 1989:55
  - *Zealanapis waipoua* Platnick & Forster 1989:49

30.1 *Paranapis insula* (Forster 1951)



30.2



30.3

30.4

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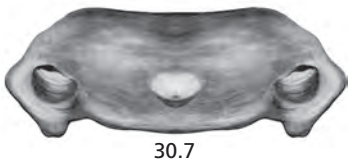
30.6



30.7

Linyphiidae

Diversity

27 genera, 136 species.

Summary description

Minute to small araneomorphs (1–6 mm), ecribellate, entelegyne, 3 claws, 8 eyes.

Diagnosis

Family variable and difficult to characterise. Slender legs with spines, especially on metatarsi and tibiae; male palp paracymbium a separate sclerite attached by a membrane; embolus part of a complex embolic division; **Mynogleninae** with a pair of clypeal sulci (Fig. 31.2).

Similar families

Most **Theridiidae** differ by the presence of a tarsal comb on tibia IV (absent in Linyphiidae); male palp without embolic division (present in Linyphiidae); epigynum without scape (many Linyphiidae have an epigynal scape). **Cyatholipidae** have lateral eyes on tubercles (not on tubercles in Linyphiidae); male palp with retro-median cymbial process (absent in Linyphiidae). **Synotaxidae** have spineless legs (spines present in Linyphiidae).

Taxonomic notes

This family has received considerable taxonomic attention; however, restricted distribution ranges and the apparent microhabitat specialisation of many species suggests that the discovery of new species is likely. Some genera, such as *Diploplecta,* include species that have apparently identical males and species can only be distinguished by the females. This is very unusual in this family and the taxonomy of these genera should be re-examined. Four species: *Linyphia albiapiata* Urquhart 1891, *Linyphia cruentum* Urquhart 1891, *Linyphia multicolor* Urquhart 1891 and *Linyphia pellos* Urquhart 1891 were declared *nomina dubia* (Paquin *et al.* 2008d). At least five undescribed species are known from grasslands and high elevation (A.D. Blest, pers. comm.).

Key references

Blest 1979, Blest & Vink 2002, 2003, Millidge 1988a.

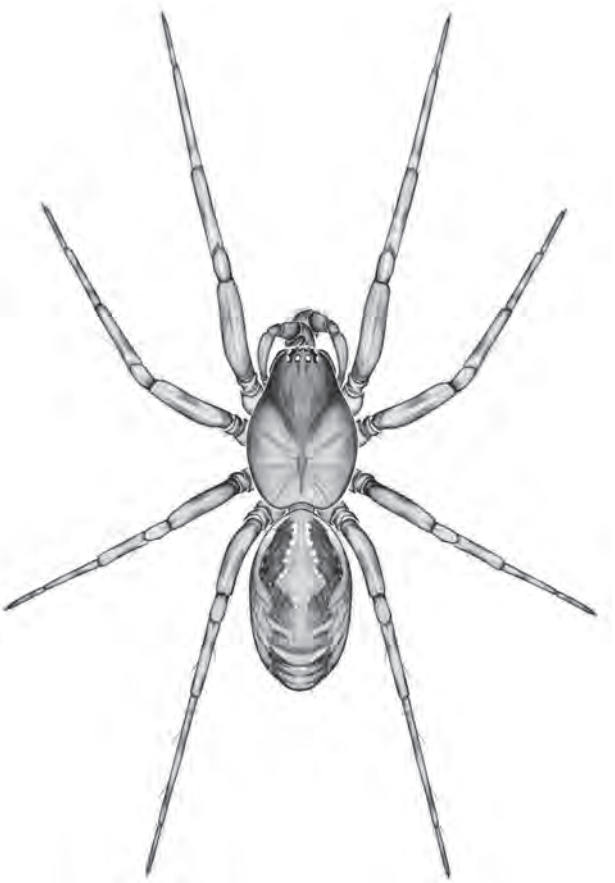
Endemicity, habitat and distribution

Millidge (1988a) reported that there are no endemic Erigoninae in New Zealand and all the known species are introduced and likely very good dispersers. Some species (*Erigone wiltoni, Erigone prominens, Mermessus fradeorum*) have been collected in suction traps designed to sample aerial dispersal (Fagan *et al.* in prep.). Most of the introduced erigonines have large distribution ranges: *Araeoncus humilis* is Palaearctic, *Diplocephalus cristatus* is Holarctic and *M. fradeorum* is cosmopolitan, whilst *E. wiltoni* and *E. prominens* are probably of Autralasian origin (Platnick 2010).

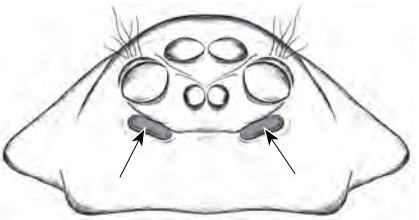
Linyphiinae are mainly endemic and belong in genera of Australian affinities (*Dunedinia, Laetesia*). *Laperousea blattifera* is naturally introduced from Australia. *Diploplecta* are very good dispersers and amongst the most commonly collected species in aerial samples. The genus appears endemic to New Zealand, but Australian Linyphiidae are too poorly known to exclude the possibility of a natural introduction. *Ostearius melanopygius* and *Tenuiphantes tenuis* are cosmopolitan spiders and have been collected in aerial samples.

Mynogleninae, in contrast to the other two subfamilies, are all endemic at both generic and specific levels.

Linyphiidae are typically associated with forest floors and litter where they build sheet-webs. Introduced species are collected in pastures and in vegetation in open habitats. Some Mynogleninae are associated with forest margins, transitional habitats such as manuka scrub and salt marshes, while some species are associated with creek beds, were they build their sheet-web over water. Linyphiidae are widespread.



31.1 *Haplinis major* (Blest 1979)



31.2

Conservation note

Introduced species are usually found in disturbed and human modified habitats and are not considered to impact native fauna associated with natural habitats — such as native forests or alpine communities. *Diplocephalus cristatus* is an exception as it is extremely abundant in native forest litter of the North Island and the northern portion of the South Island. Its high abundance may have already impacted other small species that occupy a similar ecological niche.

Species list

LINYPHIIDAE Blackwall 1859b:261

Erigoninae Simon 1884a:181

Araeoncus Simon 1884a:631

[AI] *****Araeoncus humilis* (Blackwall 1841a:636)

Diplocephalus Bertkau *in* Förstser & Bertkau 1883:236

[AI] *Diplocephalus cristatus* (Blackwall 1833a:107) **Figs 31.3–6**

Erigone Audouin 1826:319

[AI] *Erigone prominens* Bösenberg & Strand 1906:168

[AI] *Erigone wiltoni* Locket 1973:162

Lessertia Smith 1908:328

[RnE] *****Lessertia dentichelis* (Simon 1884a:390) **Fig. 31.11**

Mermessus O. Pickard-Cambridge 1899a:292

[AI] *Mermessus fradeorum* (Berland 1932a:76)

Microctenonyx Dahl 1886:80

[AI] *Microctenonyx subitaneus* (O. Pickard-Cambridge 1875e:249)

Linyphiinae Simon 1894a:597

Diplocplecta Millidge 1988a:45

Diplocplecta adjacens Millidge 1988a:56

*****Diplocplecta communis* Millidge 1988a:52

Diplocplecta duplex Millidge 1988a:55

Diplocplecta nuda Millidge 1988a:56

Diplocplecta opaca Millidge 1988a:55

Diplocplecta proxima Millidge 1988a:55

Diplocplecta simplex Millidge 1988a:56

Drapetisca Menge 1866:140

AN *Drapetisca australis* Forster 1955c:193

Dunedinia Millidge 1988a:42

Dunedinia decolor Millidge 1988a:43

*****Dunedinia denticulata* Millidge 1988a:42

Dunedinia pullata Millidge 1988a:43

Laetesia Simon 1908d:418

Laetesia amoena Millidge 1988a:40

AU *Laetesia aucklandensis* (Forster 1964b:98)

Laetesia bellissima Millidge 1988a:39

Laetesia chathami Millidge 1988a:41

Laetesia distincta Millidge 1988a:41

Laetesia germana Millidge 1988a:41

Laetesia intermedia Blest & Vink 2003:10

Laetesia minor Millidge 1988a:40

Laetesia olvidada Blest & Vink 2003:11

Laetesia paragermana Blest & Vink 2003:11

Laetesia peramoena (O. Pickard-Cambridge 1879d:694)

Laetesia prominens Millidge 1988a:41

Laetesia pseudamoena Blest & Vink 2003:10

Laetesia pulcherrima Blest & Vink 2003:10

Laetesia trispathulata (Urquhart 1886:186)

Laperousea de Dalmas 1917b:432

[NI] *****Laperousea blattifera* (Urquhart 1887:99)

Maorineta Millidge 1988a:57

Maorineta acerba Millidge 1988a:60

Maorineta gentilis Millidge 1988a:60

Maorineta minor Millidge 1988a:60

Maorineta mollis Millidge 1988a:59

Maorineta sulcata Millidge 1988a:58

*****Maorineta tibialis* Millidge 1988a:58

Maorineta tumida Millidge 1988a:59

Novalaetesia Millidge 1988a:42

*****Novalaetesia anceps* Millidge 1988a:42

Novalaetesia atra Blest & Vink 2003:11

Ostearius Hull 1911a:583

[AI] *Ostearius melanopygius* (O. Pickard-Cambridge 1879d:696) **Figs 31.9–10**

Tenuiphantes Saaristo & Tanasevitch 1996b:180

[AI] *Tenuiphantes tenuis* (Blackwall 1852a:18) **Figs 31.7–8**

Mynogleninae Blest 1979:96

Cassafroneta Blest 1979:157

*****Cassafroneta forsteri* Blest 1979:157

Haplinis Simon 1894a:700

Haplinis abbreviata (Blest 1979:120)

Haplinis alticola Blest & Vink 2002:9

Haplinis anomala Blest & Vink 2003:5

Haplinis antipodiana Blest & Vink 2002:7

Haplinis attenuata Blest & Vink 2002:8

Haplinis australis Blest & Vink 2003:5

Haplinis banksi (Blest 1979:122)

CH *Haplinis brevipes* (Blest 1979:124)

Haplinis chiltoni (Hogg 1911:308)

Haplinis contorta (Blest 1979:118)

Haplinis diloris (Urquhart 1886:184)

Haplinis dunstani (Blest 1979:124)

Haplinis exigua Blest & Vink 2002:8

Haplinis fluviatilis (Blest 1979:112)

Haplinis fucatinia (Urquhart 1894:209)

Haplinis fulvolineata Blest & Vink 2002:7

Haplinis horningi (Blest 1979:107)

Haplinis inexacta (Blest 1979:109)

Haplinis innotabilis (Blest 1979:106)

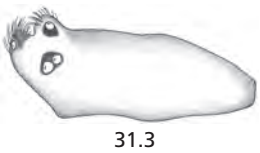
Haplinis insignis (Blest 1979:124)

Haplinis major (Blest 1979:118) **Figs 31.1, 12–13**

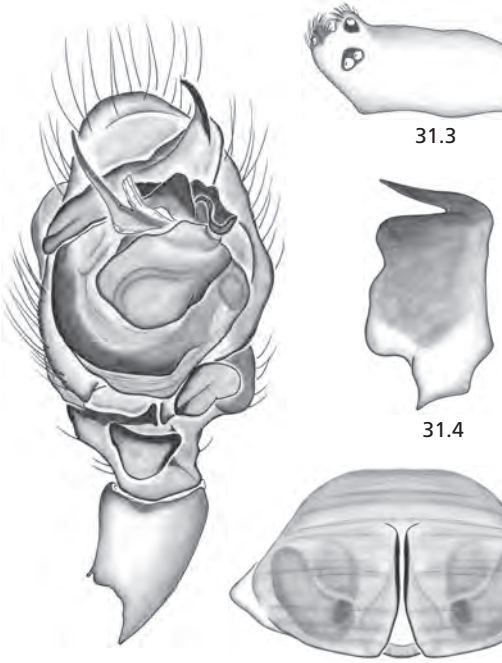
Haplinis marplesi Blest & Vink 2003:5

Haplinis minutissima (Blest 1979:106)

Haplinis morainicola Blest & Vink 2002:10



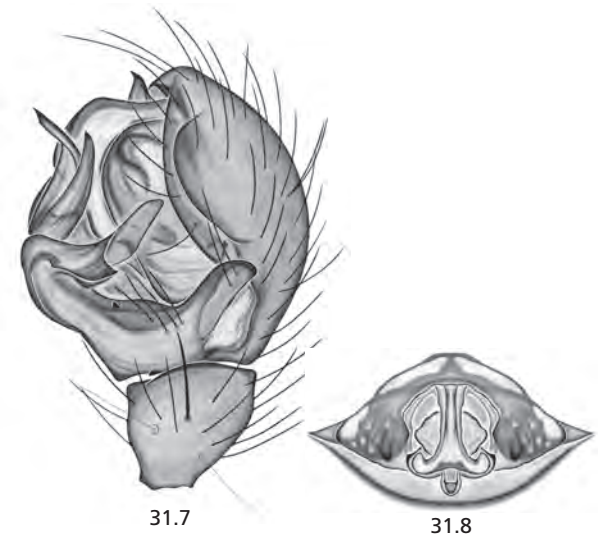
31.3



31.4

31.5

31.6



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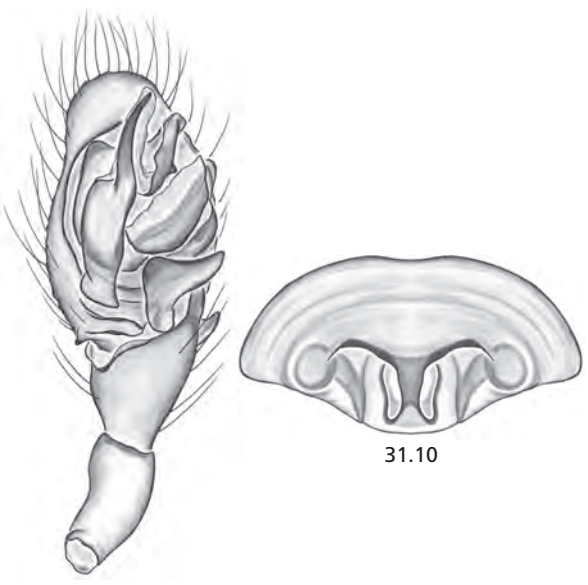


31.9

31.10

Haplinis mundenia (Urquhart 1894:207)
Haplinis paradoxa (Blest 1979:118)
Haplinis redacta (Blest 1979:121)
Haplinis rufocephala (Urquhart 1888:109)
Haplinis rupicola (Blest 1979:121)
Haplinis silvicola (Blest 1979:115)
Haplinis similis (Blest 1979:118)
**Haplinis subclathrata* Simon 1894a:701
Haplinis subdola (O. Pickard-Cambridge 1879d:693)
Haplinis subtilis Blest & Vink 2002:10
Haplinis taranakii (Blest 1979:137)
Haplinis tegulata (Blest 1979:125)
Haplinis titan (Blest 1979:116)
Haplinis tokaanuae Blest & Vink 2002:7
Haplinis wairarapa Blest & Vink 2002:9
Hyperafroneta Blest 1979:155
**Hyperafroneta obscura* Blest 1979:156
Megafroneta Blest 1979:143
Megafroneta dugdaleae Blest & Vink 2002:17
**Megafroneta elongata* Blest 1979:143
Megafroneta gigas Blest 1979:143
Metafroneta Blest 1979:154
Metafroneta minima Blest 1979:155
**Metafroneta sinuosa* Blest 1979:154
Metafroneta subversa Blest & Vink 2002:19
Metamynoglenes Blest 1979:129
Metamynoglenes absurda Blest & Vink 2002:15
Metamynoglenes attenuata Blest 1979:132
Metamynoglenes flagellata Blest 1979:132
Metamynoglenes gracilis Blest 1979:130
Metamynoglenes helicoides Blest 197:132
**Metamynoglenes incurvata* Blest 1979:129
Metamynoglenes magna Blest 1979:129
Metamynoglenes ngongotaha Blest & Vink 2002:15
Novafroneta Blest 1979:138
Novafroneta annulipes Blest 1979:140
Novafroneta gladiatrix Blest 1979:141
Novafroneta nova Blest & Vink 2003:7
Novafroneta parmulata Blest 1979:142
Novafroneta truncata Blest & Vink 2003:7
**Novafroneta vulgaris* Blest 1979:140
Parafroneta Blest 1979:147
Parafroneta ambigua Blest 1979:152
Parafroneta confusa Blest 1979:149
Parafroneta demota Blest & Vink 2002:18
Parafroneta haurokoae Blest & Vink 2002:19
Parafroneta hirsuta Blest & Vink 2003:8
Parafroneta insula Blest 1979:153
CA **Parafroneta marrineri* (Hogg 1909:165)
Parafroneta minuta Blest 1979:152
Parafroneta monticola Blest 1979:152
Parafroneta persimilis Blest 1979:152
Parafroneta pilosa Blest & Vink 2003:8
Parafroneta subalpina Blest & Vink 2002:18
Parafroneta subantarctica Blest 1979:153
Parafroneta westlandica Blest & Vink 2002:19
Poecilafroneta Blest 1979:153
**Poecilafroneta caudata* Blest 1979:153
Promynoglenes Blest 1979:125
Promynoglenes grandis Blest 1979:127
Promynoglenes minuscula Blest & Vink 2003:6
Promynoglenes minuta Blest & Vink 2002:13
**Promynoglenes nobilis* Blest 1979:127
Promynoglenes parvula Blest 1979:129
Promynoglenes silvestris Blest 1979:127
Protoerigone Blest 1979:144
Protoerigone obtusa Blest 1979:146
**Protoerigone otagoa* Blest 1979:145
Pseudafroneta Blest 1979:132
Pseudafroneta frigida Blest 1979:137
**Pseudafroneta incerta* (Bryant 1935d:76)
Pseudafroneta lineata Blest 1979:133
Pseudafroneta maxima Blest 1979:133
Pseudafroneta pallida Blest 1979:137
Pseudafroneta perplexa Blest 1979:135
Pseudafroneta prominula Blest 1979:137

31.11

31.12

31.13

Cyatholipidae

Diversity

3 genera, 8 species.

Summary description

Minute to small araneomorphs (1.8–3.0 mm), ecribellate, entelegyne, 3 claws, 8 eyes.

Diagnosis

Legs very long, especially the anterior pair (Fig. 32.1); lateral eyes on contiguous tubercles (Fig. 32.5); male palp with a retro-median cymbial process and a cup shaped paracymbium (Fig. 32.2–32.3); broad posterior spiracle connected by a transverse slit sclerotised at each end (Fig. 32.4).

Similar families

Synotaxidae have an unusual tracheal system in front of the spinnerets (broad, connected by a slit sclerotised at each end in Cyatholipidae); lateral eyes not on tubercles (on tubercles in Cyatholipidae); male palp without retro-median cymbial process (present in Cyatholipidae). **Theridiidae** usually have a tarsal comb on tibia IV (absent in Cyatholipidae).

Taxonomic notes

The discovery of additional species is possible but seems unlikely. *Hanea paturau* is rarely collected and only the male has been described.

Key references

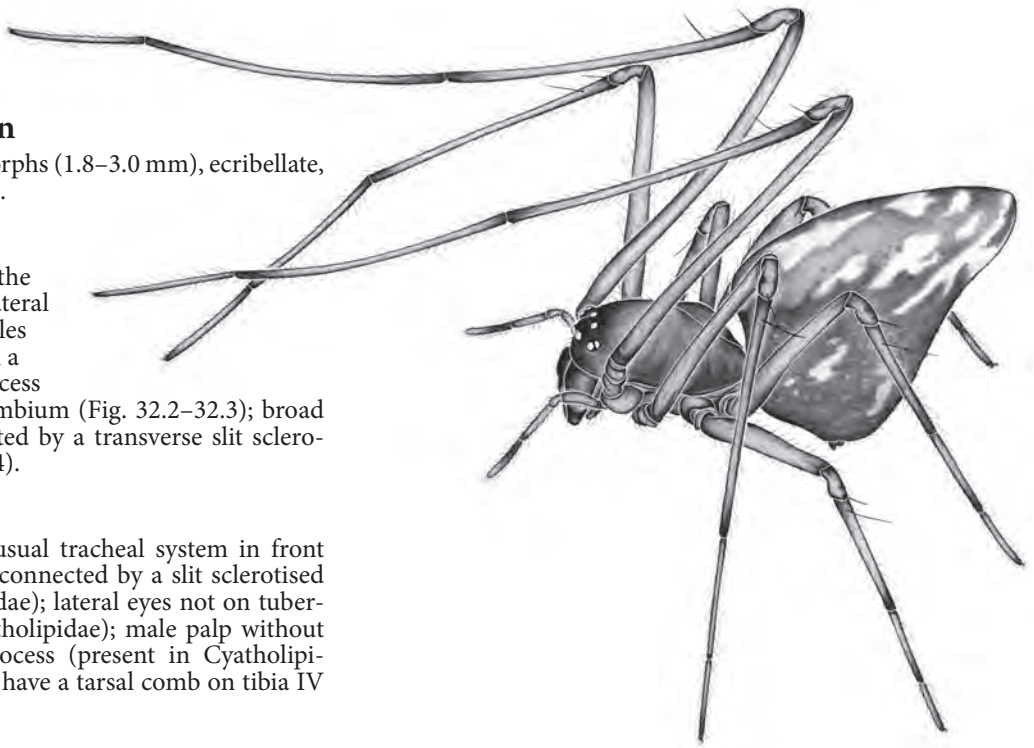
Forster 1988, Griswold 2001.

Endemicity, habitat and distribution

New Zealand Cyatholipidae are endemic at both generic and species level. These spiders are restricted to humid forest where they build snares in shaded locations along tree trunks and on mossy banks. They spin a horizontal sheet of closely meshed fine silk, which is guyed out from the substrate by lateral and ventral threads. Below the sheet there is a network of threads on which the spider clings upside down (Forster 1988). Forster (1988) reported that an undescribed Theridiidae, similar in appearance to Cyatholipidae, lives as a symbiont or kleptoparasite in *Tekella* webs. *Tekelloides* species are commonly found: *Tekelloides flavonotatus* throughout the North Island, and *T. australis* throughout the South Island. *Tekella* is also widespread.

Species list

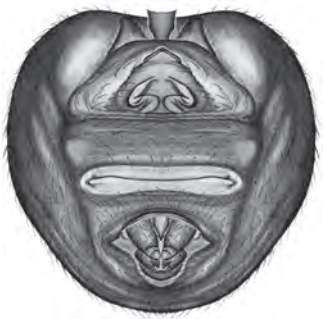
CYATHOLIPIDAE Simon 1894a:711
- *Hanea* Forster 1988:26
  - **Hanea paturau* Forster 1988:26
- *Tekella* Urquhart 1894:211 **Fig 32.4**
  - *Tekella absidata* Urquhart 1894:211
  - *Tekella bisetosa* Forster 1988:25
  - *Tekella lineata* Forster 1988:22
  - **Tekella nemoralis* (Urquhart 1889a:140)
  - *Tekella unisetosa* Forster 1988:23
- *Tekelloides* Forster 1988:26
  - **Tekelloides australis* Forster 1988:28 **Fig 32.1**
  - *Tekelloides flavonotatus* (Urquhart 1891a:136) **Figs 32.2, 3**



32.1 *Tekelloides australis* Forster 1988

32.2

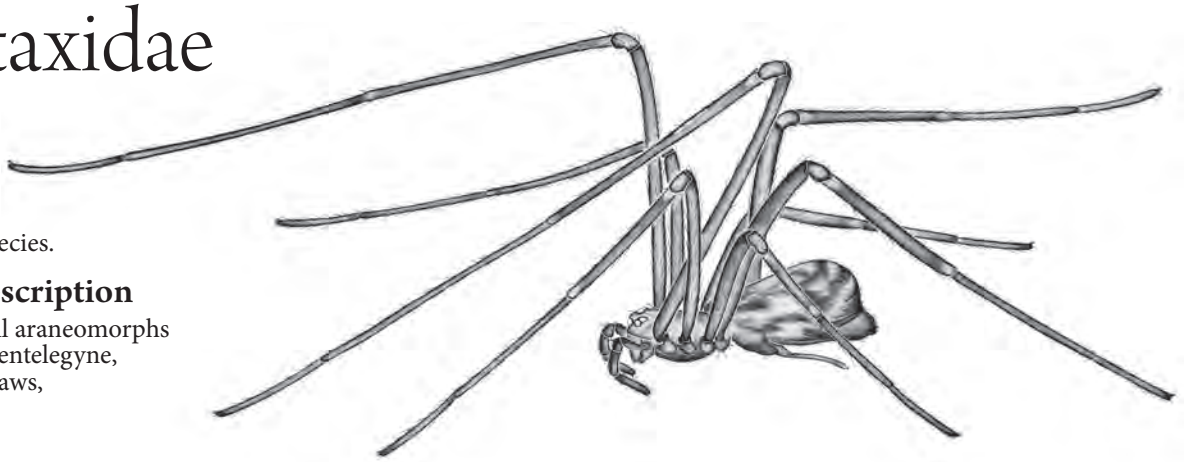
32.3



32.4

32.5

Synotaxidae



33.1 *Pahoroides courti* Forster *in* Forster *et al.* 1990

Diversity

7 genera, 52 species.

Summary description

Minute to small araneomorphs (1.6–5.9 mm), entelegyne, ecribellate, 3 claws, 8 eyes.

Diagnosis

Greatly elongated spineless legs with the first pair much longer (Fig. 33.1); all femora basally thickened (Fig. 33.3); small paracymbium, basally situated and dorsally excavated (Fig. 33.5); dorsal macrosetae of the male palpal femur, patella and/or tibia present (Fig. 33.6). Pahorinae: carapace abdomen stridulatory organ; paracymbial area on the male palp deeply excavated; epigynum with prominent scape (Figs 33.1–33.2). Physogleninae: males with pedicel and anterior abdominal region modified (Fig. 33.4); cymbium with a longitudinal incision on retrolateral margin (Fig. 33.6).

Similar families

Linyphiidae have a distinct embolic division (lacking in Synotaxidae); legs with spines (absent in Synotaxidae). **Pholcidae** have an eye arrangement in triads (no triads in Synotaxidae). Most **Theridiidae** have a tarsal comb on tarsus IV (lacking in Synotaxidae); legs with spines (absent in Synotaxidae). **Cyatholipidae** have lateral eyes on tubercles (not on tubercles in Synotaxidae).

33.2

Taxonomic notes

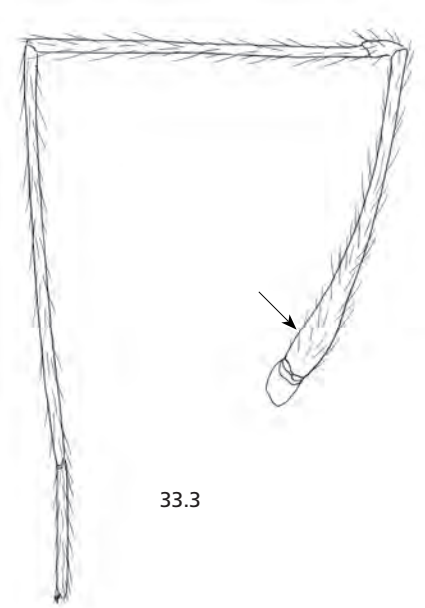
The family was reviewed by Forster *et al.* (1990) and the genus *Nomaua* by Fitzgerald & Sirvid (2009), who placed *Wairua* in synonymy, and described *Zeatupua*. However, there are six undescribed species in *Pahoroides* (B.M. Fitzgerald & P.J. Sirvid, pers. comm.). Several species are known only from one sex. *Mangua* is a possible relative of Pahorinae and Physogleninae and are *incertae sedis* in the family (Forster *et al.* 1990). *Nomaua reinga* (Forster *in* Forster *et al.* 1990:63) is a synonym of *N. perdita* (Fitzgerald & Sirvid 2009).

Key references

Forster *et al.* 1990, Fitzgerald & Sirvid 2009.

Endemicity, habitat and distribution

The subfamily Pahorinae is endemic to New Zealand as are all other genera and species. These spiders are found in shaded native forests, forest margins and tussock grasslands. Some Pahorinae construct a distinctive snare consisting of an inverted bowl with numerous threads, in which the spider hangs beneath. *Mangua* constructs small irregular snares under logs in forest or among grasses and moss on the forest floor. Most genera consist of a series of allopatric species of limited range in the North and South Islands; *Pahoroides* is restricted to the northern half of the North Island.



33.3

Species list

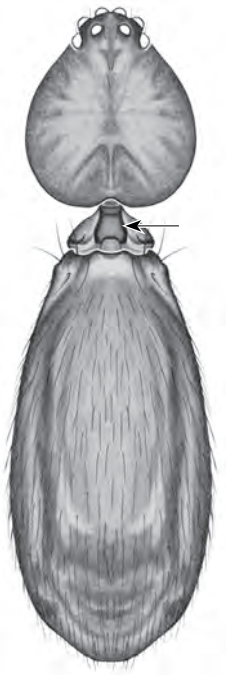
SYNOTAXIDAE Simon 1894a:494

Pahorinae Forster *in* Forster *et al.* 1990:36
- *Nomaua* Forster *in* Forster *et al.* 1990:59
  - *Nomaua arborea* Forster *in* Forster *et al.* 1990:67
  - *Nomaua cauda* Forster *in* Forster *et al.* 1990:66
  - **Nomaua crinifrons* (Urquhart 1891a:155)
  - *Nomaua nelson* Forster *in* Forster *et al.* 1990:65

Nomaua perdita Forster *in* Forster *et al.* 1990:63
Nomaua rakiura Fitzgerald & Sirvid 2009:153
Nomaua repanga Fitzgerald & Sirvid 2009:151
Nomaua rimutaka Fitzgerald & Sirvid 2009:150
Nomaua taranga Fitzgerald & Sirvid 2009:152
Nomaua urquharti Fitzgerald & Sirvid 2009:145
Nomaua waikanae (Forster *in* Forster *et al.* 1990:58)
Nomaua waikaremoana Forster *in* Forster *et al.* 1990:64
Pahora Forster *in* Forster *et al.* 1990:40
Pahora cantuaria Forster *in* Forster *et al.* 1990:47
Pahora graminicola Forster *in* Forster *et al.* 1990:44
Pahora kaituna Forster *in* Forster *et al.* 1990:48
Pahora media Forster *in* Forster *et al.* 1990:51
Pahora montana Forster *in* Forster *et al.* 1990:50
**Pahora murihiku* Forster *in* Forster *et al.* 1990:41
Pahora rakiura Forster *in* Forster *et al.* 1990:46
Pahora taranaki Forster *in* Forster *et al.* 1990:52
Pahora wiltoni Forster *in* Forster *et al.* 1990:49
Pahoroides Forster *in* Forster *et al.* 1990:53
Pahoroides courti Forster *in* Forster *et al.* 1990:56 **Figs 33.1–2**
**Pahoroides whangarei* Forster *in* Forster *et al.* 1990:54
Runga Forster *in* Forster *et al.* 1990:68
Runga akaroa Forster *in* Forster *et al.* 1990:74
Runga flora Forster *in* Forster *et al.* 1990:73
Runga moana Forster *in* Forster *et al.* 1990:72
**Runga nina* Forster *in* Forster *et al.* 1990:69
Runga raroa Forster *in* Forster *et al.* 1990:71

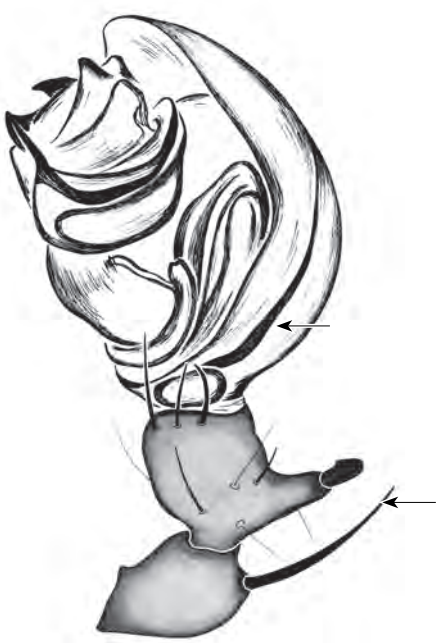
Physogleninae Petrunevich 1928a:44
Meringa Forster *in* Forster *et al.* 1990:11
Meringa australis Forster *in* Forster *et al.* 1990:18
Meringa borealis Forster *in* Forster *et al.* 1990:22 **Figs 33.4–7**
Meringa centralis Forster *in* Forster *et al.* 1990:15
Meringa conway Forster *in* Forster *et al.* 1990:22
Meringa hinaka Forster *in* Forster *et al.* 1990:14
Meringa leith Forster *in* Forster *et al.* 1990:17
Meringa nelson Forster *in* Forster *et al.* 1990:21
**Meringa otago* Forster *in* Forster *et al.* 1990:12
Meringa tetragyna Forster *in* Forster *et al.* 1990:24
Zeatupua Fitzgerald & Sirvid 2009:156
**Zeatupua forsteri* Fitzgerald & Sirvid 2009:156

Incertae sedis
Mangua Forster *in* Forster *et al.* 1990:76
Mangua caswell Forster *in* Forster *et al.* 1990:79
Mangua convoluta Forster *in* Forster *et al.* 1990:92
Mangua flora Forster *in* Forster *et al.* 1990:90
AU, CA *Mangua forsteri* (Brignoli 1983c:303)
**Mangua gunni* Forster *in* Forster *et al.* 1990:77
Mangua hughsoni Forster *in* Forster *et al.* 1990:89
Mangua kapiti Forster *in* Forster *et al.* 1990:86
Mangua makarora Forster *in* Forster *et al.* 1990:81
Mangua medialis Forster *in* Forster *et al.* 1990:88
Mangua oparara Forster *in* Forster *et al.* 1990:92
Mangua otira Forster *in* Forster *et al.* 1990:83
Mangua paringa Forster *in* Forster *et al.* 1990:86
Mangua sana Forster *in* Forster *et al.* 1990:81
Mangua secunda Forster *in* Forster *et al.* 1990:85



33.4

33.5



33.6

33.7

Theridiidae

Diversity

15 genera, 41 species.

Summary description

Minute to large araneomorphs (1–15 mm), ecribellate, entelegyne, 3 claws, 8 eyes.

Diagnosis

Tarsus IV with a row of lightly curved, serrated bristles (Fig. 34.2) (*Euryopis* is an exception); labium not reborded (Fig. 34.3).

Similar families

Cyatholipidae (*Tekelloides*) have triangular abdomen similar to *Argyrodes* and *Rhomphaea* but no tarsal comb (usually present in Theridiidae). **Anapidae** are similar to *Pholcomma,* but female lacks palp and epigynum (palp and epigynum present in Theridiidae). Many other families may be similar to Theridiidae, but no others have a serrated comb on tarsus IV.

Taxonomic notes

Theridiidae may represent one of the most speciose families in New Zealand, but it is badly in need of taxonomic attention. This makes any predictions about the size of the theridiid fauna tenuous. The described fauna may represent as little as 10–20% of the total fauna (I. Agnarsson, pers. comm.), suggesting that 200 species may occur in New Zealand. Many species were described over 100 years ago and are not recognisable based on the original description. Many types have been lost. Roewer (1955d) placed many *Theridion* names in synonymy or treated them as *nomina dubia* despite the genitalic illustrations provided by Urquhart that obviously referred to different species. Fitzgerald & Sirvid (2003, 2004) provided illustrations of the male and female genitalia of *Phycosoma oecobioides;* Marples (1955c) revised *Phoroncidia* but did not illustrate female genitalia; Hann (1994) revised the New Zealand species of *Steatoda.* Only the female of *Pholcomma hickmani* and the female of *Pholcomma turbotti* have been described. *Latrodectus atritus* Urquhart 1890 is now recognised as a colour variation and a synonym of *Latrodectus katipo* (Vink *et al.* 2008). Based on morphological and molecular evidence, *Cryptachaea blattea* is now a senior synonym of *Achaearanea acoreensis* (Berland 1932a) and a cosmopolitan species (Vink *et al.* 2009).

Additional notes

Latrodectus katipo is a species of medical importance because of its neurotoxic venom. This endemic species faces a number of conservation threats such as habitat loss (Patrick 2002), interbreeding with *Latrodectus hasseltii* (Vink *et al.* 2008) and possible competition from exotic spider species (Hann 1990b).

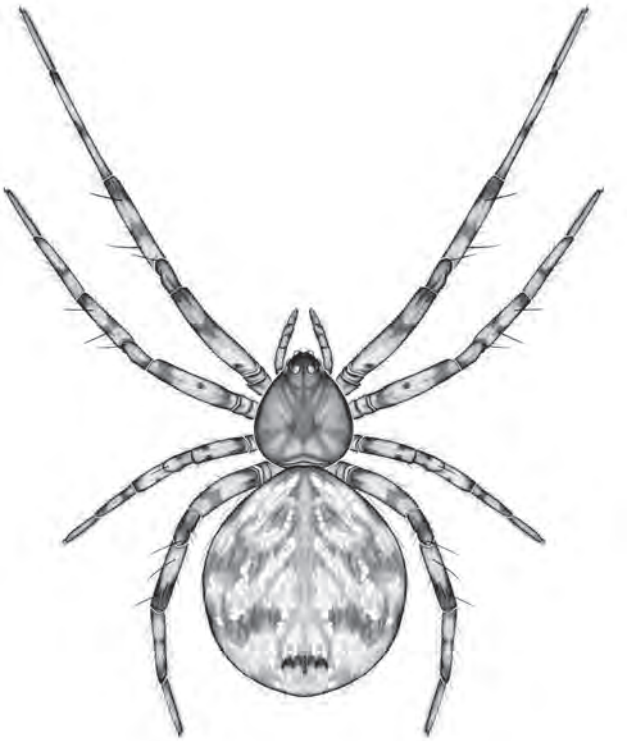
Forster (1988) commented on an undescribed Theridiidae genus similar in appearance to *Tekella* (Cyatholipidae) that lives as a symbiont or kleptoparasite in their webs.

Key references

Levi 1967c, Hann 1994, Fitzgerald & Sirvid 2003, 2004, Vink *et al.* 2008, 2009.

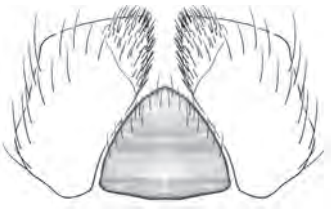
Endemicity, habitat and distribution

Because of the poor state of the taxonomy of New Zealand Theridiidae, it is not possible to provide a reliable overview of endemicity, habitat affinities and distribution. However, *Icona* is an endemic genus described by Forster (1955c) known from the Auckland Islands and Campbell Island; *Steatoda* includes two endemic species *S. truncata* and *S. lepida* (Hann 1994); *Latrodectus katipo, Phycosoma oecobioides*, *Pholcomma* spp. and *Phoroncidia* spp. are all endemic species. Some species are considered naturally introduced based on their widespread distribution in Australasia and their dispersal capabilities [*Cryptachaea veruculata* (previously *Achaearanea veruculata*), *Argyrodes antipodianus*], but other introduced species are associated with humans and considered recent introductions: *Latrodectus hasseltii* from Australasia, *Steatoda capensis* from South Africa, *Nesticodes rufipes* is pantropical while *Parasteatoda tepidariorum* and *Steatoda grossa* have cosmopolitan distributions (Platnick 2010). Theridiidae are found in a wide range of habitats, from rock piles and forest floors to houses, in which many species spin an irregular space web known as a cob-web with threads radiating in different directions. Some species are associated with disturbed and open habitats and others with vegetation.



34.1 *Cryptachaea blattea* (Urquhart 1886)

34.2



34.3

Species list

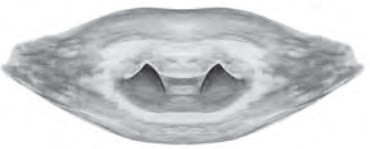
THERIDIIDAE Sundevall 1833b:15
- *Argyrodes* Simon 1864:253
- [NI] *Argyrodes antipodianus* O. Pickard-Cambridge 1880:327
- *Argyrodes lepidus* O. Pickard-Cambridge 1879d:688
- *Ariamnes* Thorell 1869:37
- *Ariamnes triangulatus* Urquhart 1887:97
- *Cryptachaea* Archer 1946:36
- *Cryptachaea blattea* (Urquhart 1886:190) **Figs 34.1, 13–14**
- [NI] *Cryptachaea veruculata* (Urquhart 1886:188) **Figs 34.7–8**
- *Episinus* Walckenaer *in* Latreille 1809:371
- *Episinus antipodianus* O. Pickard-Cambridge 1879d:701
- *Episinus similanus* Urquhart 1893a:182
- *Episinus similitudus* Urquhart 1893a:181
- *Euryopis* Menge 1868:174
- *Euryopis nana* (O Pickard-Cambridge 1879d:691)
- *Icona* Forster 1955c:189
- AU, CA **Icona alba* Forster 1955c:190
- AU *Icona drama* Forster 1964b:96
- *Latrodectus* Walckenaer 1805:81
- [AI] *Latrodectus hasseltii* Thorell 1870c:370
- *Latrodectus katipo* Powell 1871:57 **Figs 34.4–6**
- *Moneta* O. Pickard Cambridge 1870d:736
- *Moneta conifera* (Urquhart 1887:96)
- *Nesticodes* Archer 1950:22
- [AI] **Nesticodes rufipes* (Lucas 1846:263)
- *Parasteatoda* Archer 1946:38
- [AI] **Parasteatoda tepidariorum* (C.L. Koch 1841a:75) **Figs 34.11–12**
- *Pholcomma* Thorell 1869:98
- AN *Pholcomma antipodianum* (Forster 1955c:198)
- CA *Pholcomma hickmani* (Marples 1964b:74)
- *Pholcomma turbotti* (Marples 1956:336)
- *Phoroncidia* Westwood 1835:452
- *Phoroncidia pukeiwa* (Marples 1955c:756)
- *Phoroncidia puketoru* (Marples 1955c:758)
- *Phoroncidia quadrata* (O. Pickard-Cambridge 1879d:698)
- *Phycosoma* O. Pickard-Cambridge 1879d:692
- NZ, CH **Phycosoma oecobioides* O. Pickard-Cambridge 1879d:692
- *Rhomphaea* L. Koch 1872a:289
- *Rhomphaea urquharti* (Bryant 1933b:12)
- *Steatoda* Sundevall 1833b:16
- [AI] *Steatoda capensis* Hann 1990a:283 **Figs 34.15–17**
- [AI] *Steatoda grossa* (C.L. Koch 1838a:112) **Figs 34.9–10**
- *Steatoda lepida* (O. Pickard-Cambridge 1879d:690)
- *Steatoda truncata* (Urquhart 1888:115)
- *Theridion* Walckenaer 1805:72
- *Theridion albocinctum* Urquhart 1892b:236
- *Theridion ampliatum* Urquhart 1892b:237
- *Theridion argentatulum* Roewer 1942a:484
- *Theridion cruciferum* Urquhart 1886:193
- *Theridion flabelliferum* Urquhart 1887:106
- *Theridion gracilipes* Urquhart 1889a:145
- *Theridion longicrure* Marples 1956:339
- *Theridion porphyreticum* Urquhart 1889a:144
- *Theridion pumilio* Urquhart 1886:190
- *Theridion punicapunctatum* Urquhart 1891a:147
- *Theridion squalidum* Urquhart 1886:195
- *Theridion viridanum* Urquhart 1887:106
- *Theridion zantholabio* Urquhart 1886:197

34.4

34.5

34.6

34.7

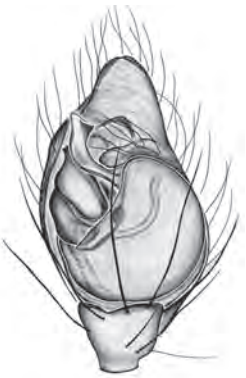

34.8

34.9

34.10

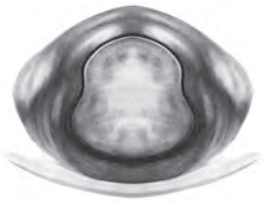
34.11

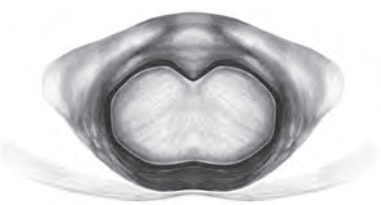
34.12


34.13

34.14

34.15


34.16
with mating plug


34.17

Nicodamidae

Diversity

2 genera, 2 species.

Summary description

Medium to large araneomorphs (8–13 mm), entelegyne, cribellate, 3 claws, 8 eyes.

Diagnosis

Male palpal tibia with large dorsal apophysis (as opposed to retrolateral) (Fig. 35.3); tarsi and metatarsi IV without trichobothria.

Similar families

Cribellate members of **Desidae**, **Amaurobiidae, Agelenidae** and **Amphinectidae** differ by the presence of trichobothria on tarsi and/or metatarsi IV (absent in Nicodamidae). **Tetragnathidae** (*Meta*) have no cribellum (present in Megadictyninae, Nicodamidae).

Taxonomic notes

The family was revised by Harvey (1995); the discovery of additional species is possible in New Zealand, but unlikely. The male of *Forstertyna marplesi* is still unknown. Megadictyninae have a cribellum, but other Australian members of the family are ecribellate.

Key references

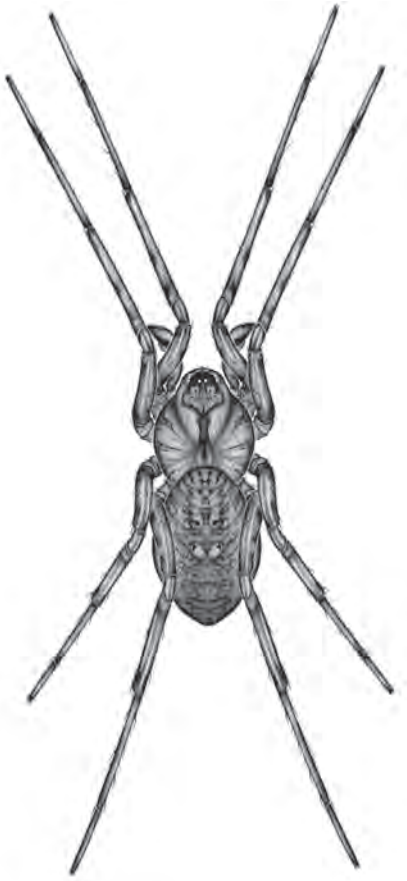
Forster 1970b, Harvey 1995.

Endemicity, habitat and distribution

The subfamily Megadictyninae is endemic to New Zealand. *Megadictyna thilenii* is found from the middle of the South Island to Auckland in the North Island. *Forstertyna marplesi* is only known from a few localities in Fiordland National Park, on the south west coast of the South Island (Harvey 1995). Both species are associated with moist forests, and are found under logs and stones (Forster 1970b).

Species list

NICODAMIDAE Simon 1897c:15
Megadictyninae Lehtinen 1967:296
Forstertyna Harvey 1995:381
**Forstertyna marplesi* (Forster 1970b:181)
Megadictyna Dahl 1906b:62
Megadictyna thilenii* Dahl 1906b:62 **Figs 35.1–4



35.1 *Megadictyna thilenii* Dahl 1906

35.2

35.4

35.3

Dictynidae

Diversity

3 genera, 9 species.

Summary description

Minute to small araneomorphs (1.5–5 mm), entelegyne, cribellate, 3 claws, 6 or 8 eyes.

Diagnosis

Cribellum and calamistrum present; males have modified chelicerae (Fig. 36.2).

Similar families

Desidae have cribellate members but most males have semi-porrect chelicerae (vertical chelicerae in Dictynidae). Otherwise best differentiated by the examination of genital characters.

Taxonomic notes

The family has received taxomonic attention; however, Forster (1970b) reported uncertainties about species limits and that some additional taxa were known but were not described because of insufficient material. The males of *Paradictyna ilamia* and *Viridictyna nelsonensis* are unknown. *Dictyna urquharti* Roewer 1951 is a *nomen dubium* (Paquin *et al.* 2008d).

Key reference

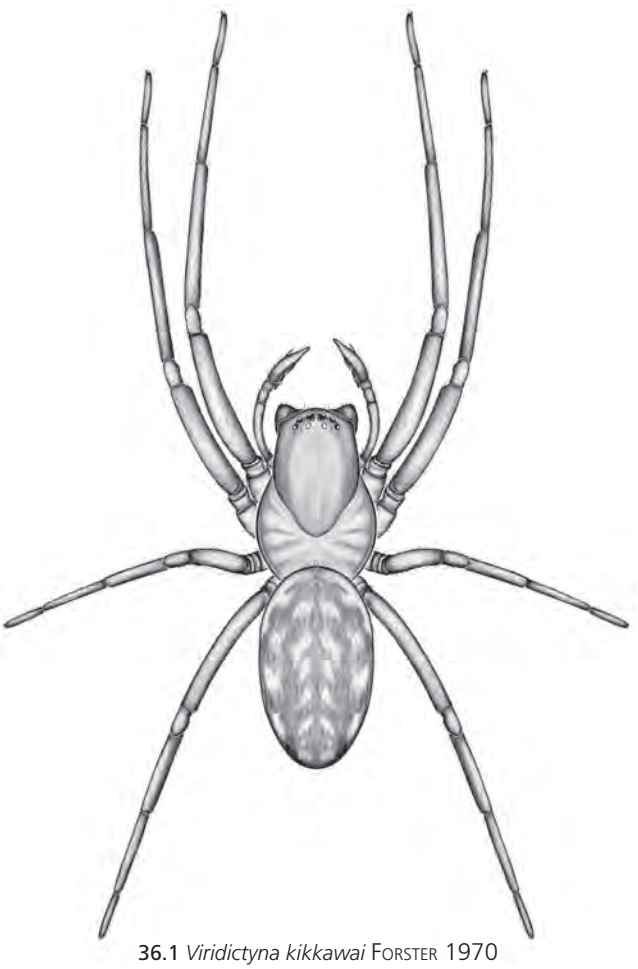
Forster 1970b.

Endemicity, habitat and distribution

Endemic at both generic and species levels. *Paradictyna* and *Viridictyna* live in forest on low foliage. *Arangina* is associated with stream beds where it builds webs among the stones. The webs consist of parallel threads criss-crossed with a hackled band to form a ladder-like structure (Forster 1970b). Other genera apparently do not build snares (Forster 1970b).

Species list

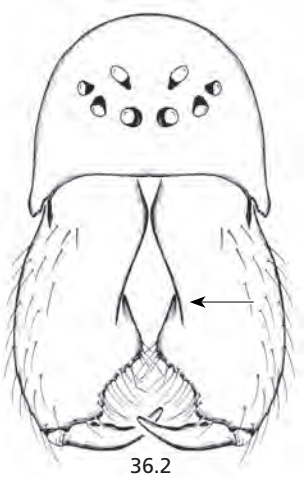
DICTYNIDAE O. Pickard-Cambridge 1871c:213
- *Arangina* Lehtinen 1967:215
  - **Arangina cornigera* (de Dalmas 1917a:336)
  - *Arangina pluva* Forster 1970b:132
- *Paradictyna* Forster 1970b:137
  - *Paradictyna ilamia* Forster 1970b:138
  - **Paradictyna rufoflava* (Chamberlain 1946:94)
- *Viridictyna* Forster 1970b:133
  - *Viridictyna australis* Forster 1970b:135
  - **Viridictyna kikkawai* Forster 1970b:133 **Figs 36.1, 3–5**
  - *Viridictyna nelsonensis* Forster 1970b:136
  - *Viridictyna parva* Forster 1970b:137
  - *Viridictyna picata* Forster 1970b:134



36.1 *Viridictyna kikkawai* Forster 1970

36.3

36.4



36.2

36.5

Hahniidae

Diversity

5 genera, 27 species.

Summary description

Minute to small araneomorphs (1.6–2.5 mm), entelegyne, ecribellate, 3 claws, 8 eyes.

Diagnosis

Six spinnerets in a transverse row (Fig. 37.2); male palp with a sharp, curved tibial apophysis (Figs 37.3–37.4).

Similar families

No other family has a similar spinneret arrangement.

Taxonomic notes

Hahniidae have received taxonomic attention, but additional species are likely to be discovered. There is at least one undescribed species (B.M. Fitzgerald, pers. comm.). Most species are known from one sex only: the male of *Alistra reinga* is the only one known in the genus. The males of *Scotospilus divisus, S. westlandicus,* six species of *Kapanga* and the females of *K. grana* and *Porioides tasmani* are all unknown. Since Forster (1970b), *Tawerana* (Forster 1970) was synonymised under *Alistra*; *Tuata* (Forster 1970) under *Kapanga*; *Poria* (Forster 1970) was an homonym replaced by *Porioides,* and *Tuana* (Forster 1970) synonymised under *Scotospilus.*

Key reference

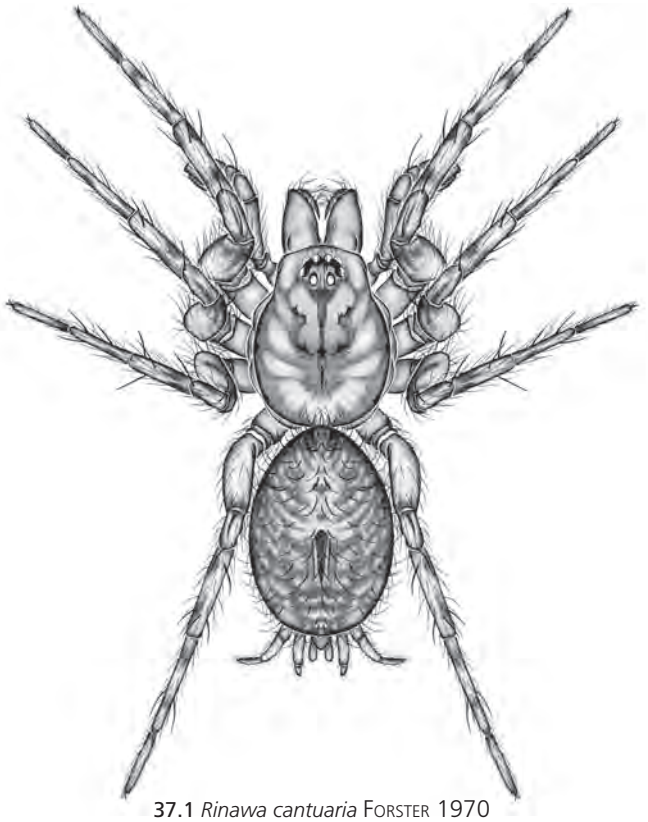
Forster 1970b.

Endemicity, habitat and distribution

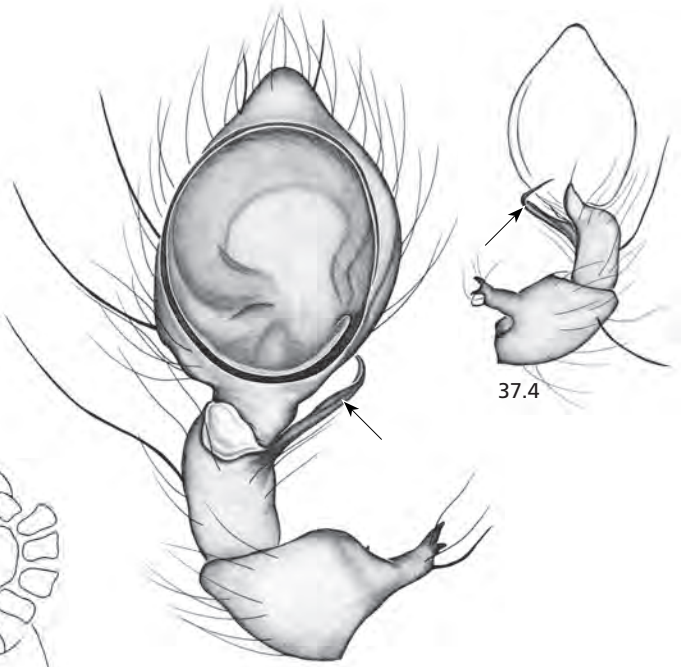
Kapanga, *Porioides* and *Rinawa* are endemic genera. All species of *Alistra* and *Scotospilus* are endemic, but other members of these genera are known from India to Australasia. Hahniidae species are associated with forest litter and mosses where they spin a delicate sheet web over depressions in the ground. Their distribution is difficult to summarise because few records besides the type material, which constitutes only a few specimens, have been published (Forster 1970b).

Species list

HAHNIIDAE Bertkau 1878:393
- *Alistra* Thorell 1894a:40
  - *Alistra centralis* (Forster 1970b:164)
  - *Alistra inanga* (Forster 1970b:163)
  - *Alistra mangareia* (Forster 1970b:161)
  - *Alistra napua* (Forster 1970b:165)
  - *Alistra opina* (Forster 1970b:164)
  - *Alistra reinga* (Forster 1970b:161)
  - *Alistra tuna* (Forster 1970b:162)
- *Kapanga* Forster 1970b:150
  - *Kapanga alta* Forster 1970b:156
  - *Kapanga festiva* Forster 1970b:156
  - *Kapanga grana* Forster 1970b:154
  - AU *Kapanga hickmani* (Forster 1964b:85)
  - *Kapanga isulata* (Forster 1970b:158)
  - *Kapanga luana* Forster 1970b:154
  - *Kapanga mana* Forster 1970b:156
  - *Kapanga manga* Forster 1970b:157
  - *Kapanga solitaria* (Bryant 1935d:80)
  - **Kapanga wiltoni* Forster 1970b:151
- *Porioides* Forster *in* Platnick 1989b:413
  - **Porioides rima* (Forster 1970b:159)
  - *Porioides tasmani* (Forster 1970b:160)
- *Rinawa* Forster 1970b:141
  - *Rinawa bola* Forster 1970b:145
  - *Rinawa cantuaria* Forster 1970b:142 **Figs 37.1, 3–5**
  - **Rinawa otagoensis* Forster 1970b:142
  - *Rinawa pula* Forster 1970b:145
- *Scotospilus* Simon 1886d:61
  - *Scotospilus divisus* (Forster 1970b:149)
  - *Scotospilus nelsonensis* (Forster 1970b:149)
  - *Scotospilus plenus* (Forster 1970b:147)
  - *Scotospilus westlandicus* (Forster 1970b:150)

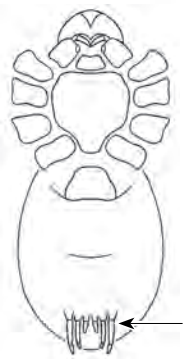


37.1 *Rinawa cantuaria* Forster 1970



37.4

37.3



37.2

37.5

Zodariidae

Diversity

1 genus, 1 species.

Summary description

Small araneomorphs (4–6 mm), entelegyne, cribellate, 3 claws, 8 eyes.

Diagnosis

Anterior spinnerets long, other spinnerets reduced (Fig. 38.5); absence of serrula; presence of a chilum composed of two roughly triangular hairless sclerites (hidden under the clypeus); eye rows strongly procurved (Figs 38.1, 38.6); featureless epigynal plate (Fig. 38.4); shape of palpal tibia distinctive (Figs 38.2–38.3).

Similar families

Amaurobiidae and **Agelenidae** have a similar arrangement of the spinnerets, but differ by the eye arrangement (AER, PER strongly procurved in Zodariidae).

Taxonomic notes

The discovery of additional species is possible in New Zealand, but seems unlikely (R. Jocqué, pers. comm.).

Key references

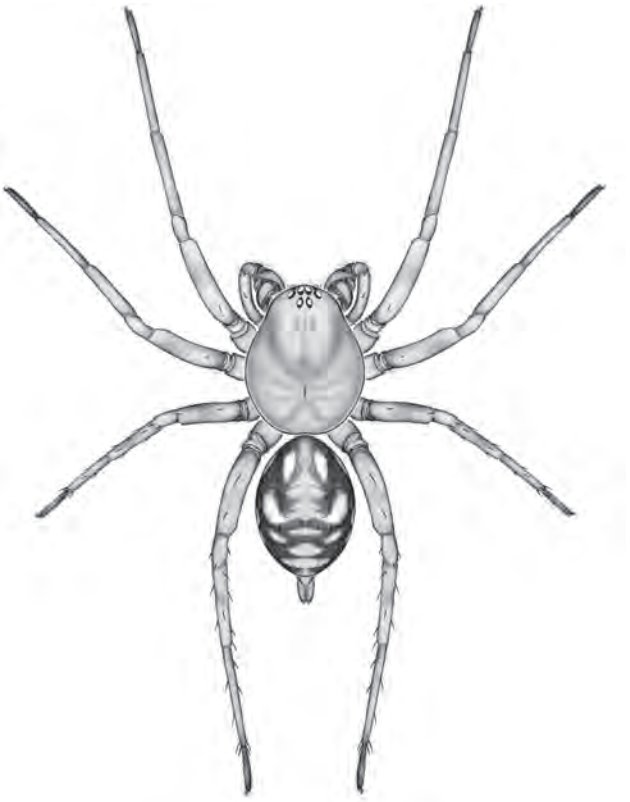
Jocqué 1991a, Forster & Forster 1999.

Endemicity, habitat and distribution

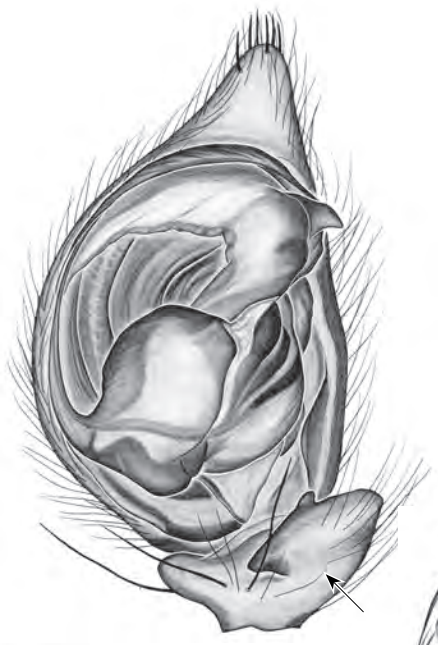
This monotypic genus is endemic to New Zealand, although an undescribed species may occur in New Caledonia (Jocqué 1991a). *Forsterella faceta* is known from the North Island where it is found in native forest litter under stones and logs (Jocqué 1991a, Forster & Forster 1999).

Species list

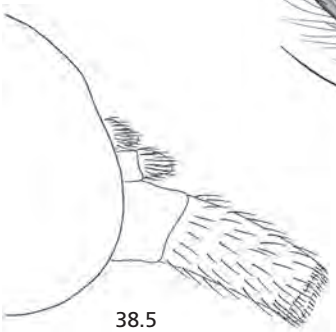
ZODARIIDAE Thorell 1881:184
Storeninae Simon 1893a:414
Forsterella Jocqué 1991a:52
Forsterella faceta* Jocqué 1991a:54 **Figs 38.1–4



38.1 *Forsterella faceta* Jocqué 1991

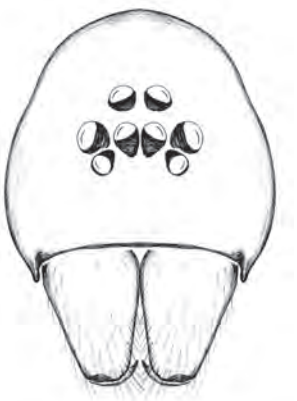


38.2



38.5

38.3



38.6

38.4

Sparassidae

Diversity

5 genera, 5 species.

Summary description

Very large araneomorphs (30–40 mm), entelegyne, ecribellate, 2 claws, 8 eyes.

Diagnosis

Laterigrade legs (Fig. 39.1); membranous trilobed dorso-apical extension of the metatarsus (Fig. 39.5).

Similar families

Thomisidae are laterigrade but much smaller (< 12 mm) (Sparassidae > 12 mm); no membranous trilobed dorso-apical extension of the metatarsus (present in Sparassidae). *Hemicloea rogenhoferi* (**Gnaphosidae**) and *Uzakia unica* (**Cycloctenidae**) are also laterigrade but lack the typical dorso-apical extension of the metatarsus.

Taxonomic notes

All known records are of species associated with human activities. Undiscovered endemic species are extremely unlikely, but additional introductions are possible. *Pandercetes peronianus* is an old name that has not been recognised since its original description and is likely a synomym.

Key references

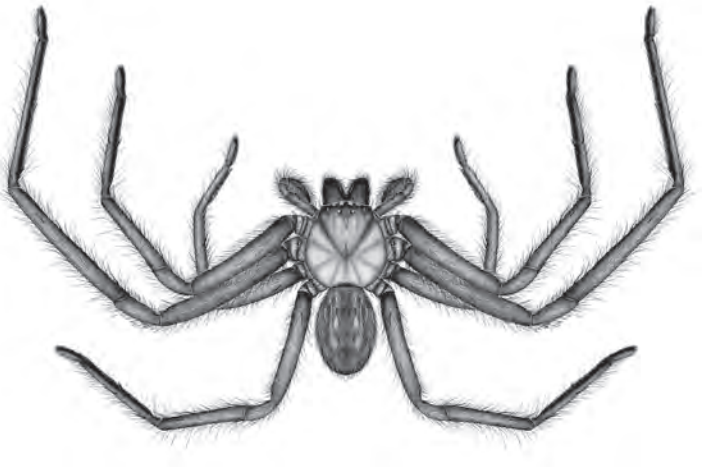
Hirst 1993a, Lew 2005, Hirst *et al.* 2006.

Endemicity, habitat and distribution

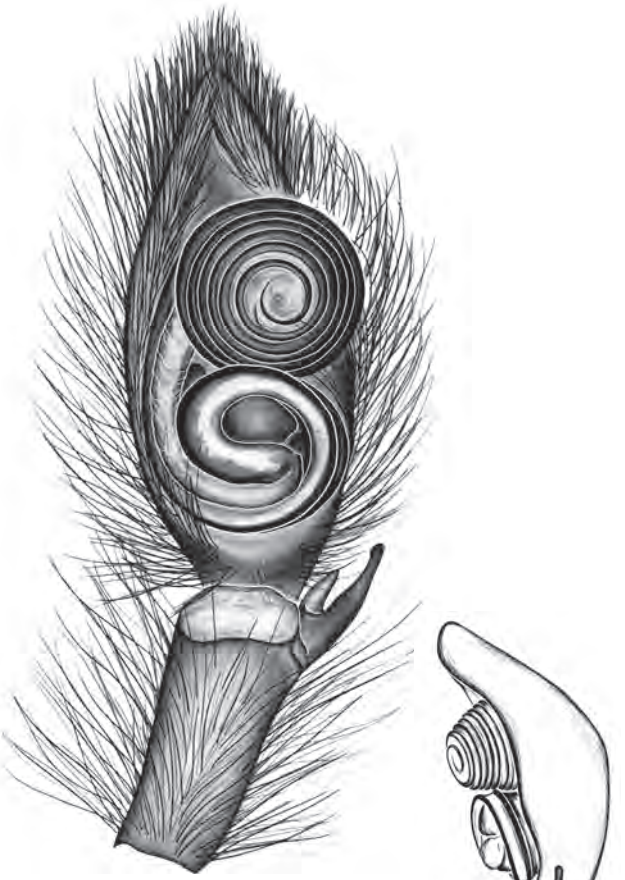
All Sparassidae recorded from New Zealand are introduced. *Delena cancerides* and *Isopeda villosa* are Australian species, but are known from wild populations around Auckland (Hirst *et al.* 2006). *Heteropoda venatoria* has a pantropical distribution and *Isopedella victorialis* is an Australian species; both have been collected, but it is unlikely that they have established, viable populations. Several other species were intercepted (Hirst *et al.* 2006), but none were collected post-border. So far, Sparassidae are not believed to be a threat to the native fauna because they are all associated with disturbed habitats modified by humans (Hirst *et al.* 2006).

Species list

SPARASSIDAE Bertkau 1872:232
Delena Walckenaer 1837:490
[AI] *Delena cancerides* Walckenaer 1837:490 **Figs 39.1–4**
Heteropoda Latreille 1804b:155
[RnE] *Heteropoda venatoria* (Linnée 1767:1035)
Isopeda L. Koch 1875a:678
[AI] *Isopeda villosa* L. Koch 1875a:687
Isopedella Hirst 1990:20
[RnE] *Isopedella victorialis* Hirst 1993a:61
Pandercetes L. Koch 1875a:739
Pandercetes peronianus (Walckenaer 1837:493)



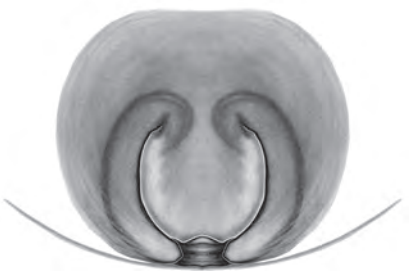
39.1 *Delena cancerides* Walckenaer 1837



39.2

39.3

39.5



39.4

Anyphaenidae

Diversity

1 genus, 8 species.

Summary description

Medium to large araneomorphs (6.6–13.6 mm), entelegyne, ecribellate, 2 claws, 8 eyes.

Diagnosis

Tarsal claw tufts composed of several rows of lamelliform setae (Fig. 40.5); tracheal spiracle broad, situated close to the spinnerets, approximately 1/5 between the spinnerets and the epigastric furrow (Fig. 40.7); large colulus (Fig. 40.6); robust porrect chelicerae that project about 1/2 to 1/3 of the length of the cephalothorax (Fig. 40.1).

Similar families

Clubionidae have no colulus (present in Anyphaenidae). **Miturgidae** (*Cheiracanthium*) have no fovea (longitudinal and distinct in Anyphaenidae); male cymbium with a basal projection (no such projection in Anyphaenidae). **Zoropsidae** have notched trochanters (not notched in Anyphaenidae); male palps brightly coloured (orange) (not brightly coloured in Anyphaenidae).

Taxonomic notes

Recent examination of members of the genus using morphological and genetic data indicates that not all *Amaurobioides* species are valid, and the number of species is likely to decrease (Opell *et al.* 2007a, B.D. Opell, pers. comm.).

Key references

Forster 1970b, Opell *et al.* 2007a.

Endemicity, habitat and distribution

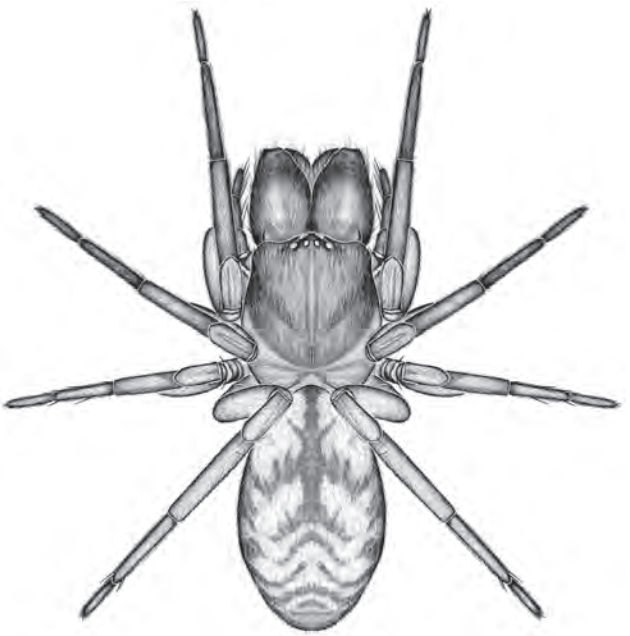
Amaurobioides is known from Africa, Chile, and Australia, but all New Zealand species are endemic. These spiders live in the marine spray zone, where they construct silk retreats in rock crevices at, or slightly below, mean high tide level (Opell *et al.* 2007a). The genus is found on both North and South Islands but the species distribution forms contiguous clusters of localities along the coasts (Opell *et al.* 2007a).

Classification and nomenclature note

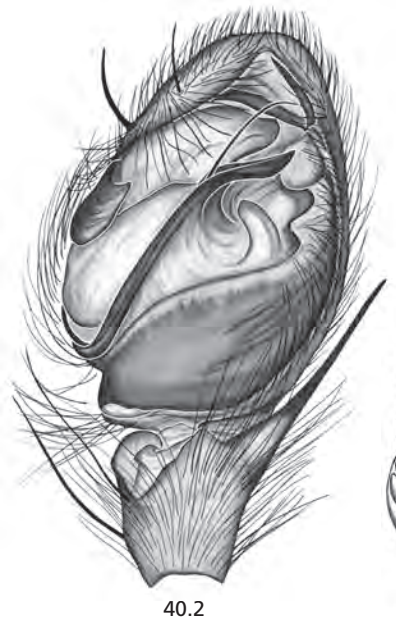
Previously known as the family Amaurobioididae.

Species list

ANYPHAENIDAE Bertkau 1878:379
Amaurobiodininae Hickman 1949:31
Amaurobioides O. Pickard-Cambridge 1883:356
Amaurobioides major Forster 1970b:173
Amaurobioides maritima* O. Pickard-Cambridge 1883:356 **Figs 40.1–4
Amaurobioides minor Forster 1970b:174
Amaurobioides pallida Forster 1970b:174
Amaurobioides picuna Forster 1970b:171
AU, CA *Amaurobioides piscator* Hogg 1909:164
Amaurobioides pleta Forster 1970b:170
Amaurobioides pohara Forster 1970b:174



40.1 *Amaurobioides maritima* O. Pickard-Cambridge 1883



40.2

40.3

40.4

40.5

40.6

40.7

Clubionidae

Diversity

1 genus, 14 species.

Summary description

Small to medium-sized araneomorphs (3.9–10 mm), entelegyne, ecribellate, 2 claws, 8 eyes.

Diagnosis

Two claws with well-developed claw tufts (Fig. 42.5); 8 subequal eyes (except *C. peculiaris*) in 2 rows (Fig. 42.1); colulus absent.

Similar families

Gnaphosidae have cylindrical spinnerets (conical in Clubionidae); widely spaced at base (almost contiguous in Clubionidae); PER recurved and eyes of different sizes (straight PER and eyes subequal in Clubionidae).

Taxonomic notes

New Zealand Clubionidae have been revised, but the discovery of additional species remains possible. The male of *Clubiona blesti* and *Clubiona torta* are still unknown. Forster (1979) suggested that *Clubiona chathamensis* from Chatham Island may be a senior synonym of *Otagoa chathamensis* (Desidae), but the type material has not been examined.

Key reference

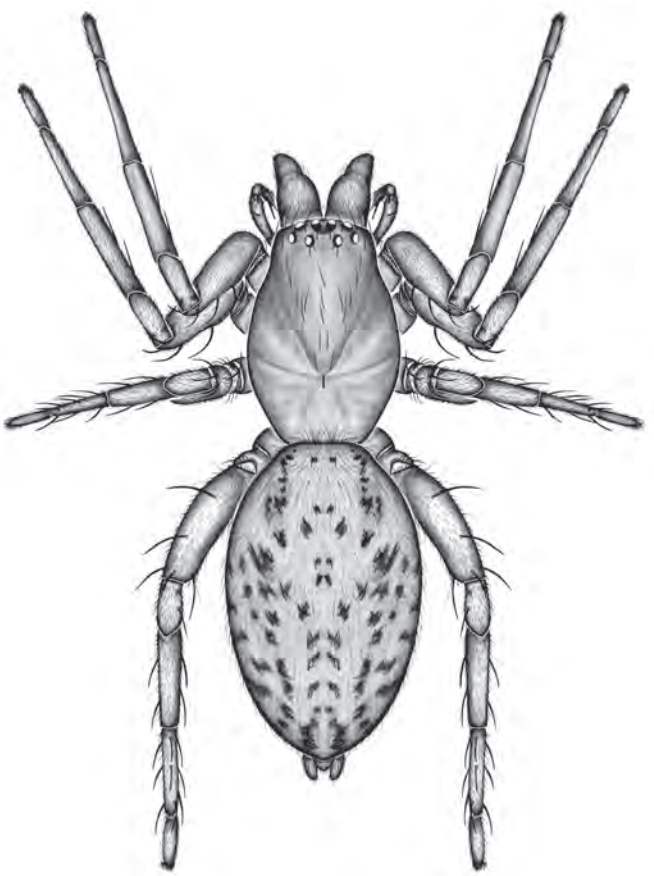
Forster 1979.

Endemicity, habitat and distribution

All New Zealand Clubionidae belong to *Clubiona*, a worldwide genus, but all species are endemic. These spiders are usually found associated with vegetation (grass, mountain tussocks, loose bark of *Fuchsia* trees, flax, and cabbage trees) in a wide range of habitats (alpine, wet and marshy areas, native forest, disturbed forest, forest edges), but also under stones. *Clubiona consensa,* however, is the only true forest dweller and is usually collected from the forest floor amongst litter and mosses or on ferns. In contrast, the common *Clubiona huttoni* is found at forest margins but does not extend far into forest habitat. Most species are widespread and found in the North and South Islands, although a few species have a restricted range such as *Clubiona torta,* which is found only in Nelson (South Island), and *Clubiona delicata* known only from a single series of specimens from Hawkes Bay (North Island).

Species list

CLUBIONIDAE Wagner 1887a:104
Clubiona Latreille 1804b:134
Clubiona blesti Forster 1979:78
Clubiona cada Forster 1979:79
Clubiona cambridgei L. Koch 1873a:419
CH *Clubiona chathamensis* Simon 1905d:417
Clubiona clima Forster 1979:80
Clubiona consensa Forster 1979:84
Clubiona contrita Forster 1979:77 **Figs 41.2–3**
Clubiona convoluta Forster 1979:89 **Figs 41.1, 4**
Clubiona delicata Forster 1979:91
Clubiona huttoni Forster 1979:85
Clubiona peculiaris L. Koch 1873a:427
Clubiona producta Forster 1979:88
Clubiona scatula Forster 1979:78
Clubiona torta Forster 1979:76



41.1 *Clubiona convoluta* Forster 1979

41.2

41.3

41.5

41.4

Corinnidae

Diversity

1 genus, 2 species.

Summary description

Medium-sized araneomorphs (7–10 mm), entelegyne, ecribellate, 2 claws, 8 eyes.

Diagnosis

The common species *Supunna picta* has a highly distinctive dorsal pattern (Fig. 42.1); in females, median spinnerets with 3, and posterior spinnerets with 2, large cylindrical spigots (Fig. 42.5).

Similar families

Clubionidae have an ocular area that occupies almost the entire width of the cephalothorax (eyes occupy less than half of the width of cephalothorax in Corinnidae). **Lamponidae** have a distinct groove on the medial margin of the endites (no groove in Corinnidae).

Taxonomic notes

The only established species was introduced to New Zealand. It is extremely unlikely there are undiscovered endemic species, but additional introductions are possible.

Key references

Forster 1979, Bonaldo 2000, Ubick & Richman 2005.

Endemicity, habitat and distribution

Supunna picta is a native of Australia and was recorded for the first time in the 1940s from Auckland. It is now found on both North and South Islands (Forster 1979, Forster & Forster 1999). It is commonly associated with houses, gardens, and other human activities, but also reported from open habitats (Forster 1979). A second species, *S. funerea,* was collected twice (from Nelson and Auckland) (R.J. Raven, pers. comm.) but is probably not established.

Classification and nomenclature note

Previously placed in Clubionidae.

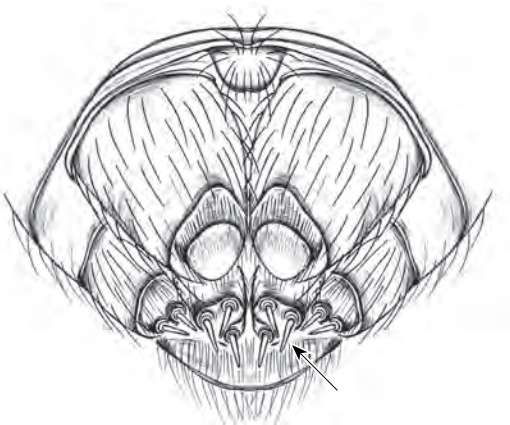
Species list

CORINNIDAE Karsch 1880c:374
Corinninae Karsch 1880c:374
Supunna Simon 1897a:173
[RnE] *Supunna funerea* Simon 1896b:407
[AI] *Supunna picta* (L. Koch 1873a:438) **Figs 42.1–4**

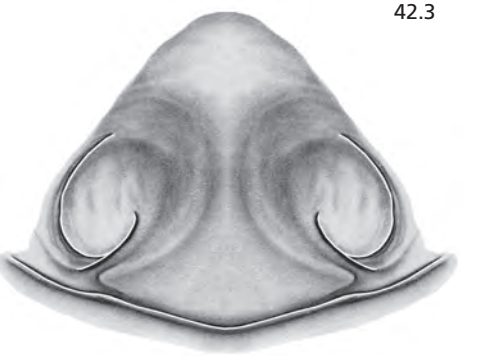
42.1 *Supunna picta* (L. Koch 1873)

42.2

42.3



42.5



42.4

Zoridae

Diversity

1 genus, 1 species.

Summary description

Medium-sized araneomorphs (10.2–11.0 mm), entelegyne, ecribellate, 2 claws, 8 eyes.

Diagnosis

Presence of dense setal tufts in the eye region and abdomen (Fig. 43.1); strongly recurved eye rows (Fig. 43.1).

Similar families

Pisauridae have a similar eye pattern but are larger (8–28 mm) (10–11 mm for Zoridae); lack of setal tufts in the eye regions (present in Zoridae).

Taxonomic notes

A total of five undescribed species may occur, all introduced from Australia (R.J. Raven, pers. comm.).

Key references

Forster & Wilton 1973, Raven & Stumkat 2003.

Endemicity, habitat and distribution

Argoctenus aureus is known from Australia and apparently was naturally introduced in New Zealand; it has been collected on a few occasions in subalpine scree slopes of the South Island, which is not a particularly welcoming habitat for introduced species. However, it may simply indicate that *A. aureus* can disperse by ballooning from one alpine habitat to another. One of the species illustrated by Forster & Wilton (1973) was found in a commercial package from Australia, and was seen in gardens in the Nelson area (South Island). Other specimens examined by Forster & Wilton (1973) were collected in grass and in pastures. These species have different genitalia, but were not documented any further because of the likelihood that they were already described as part of the Australian fauna. However, more than 30 years later, the identity of these spiders is still unknown.

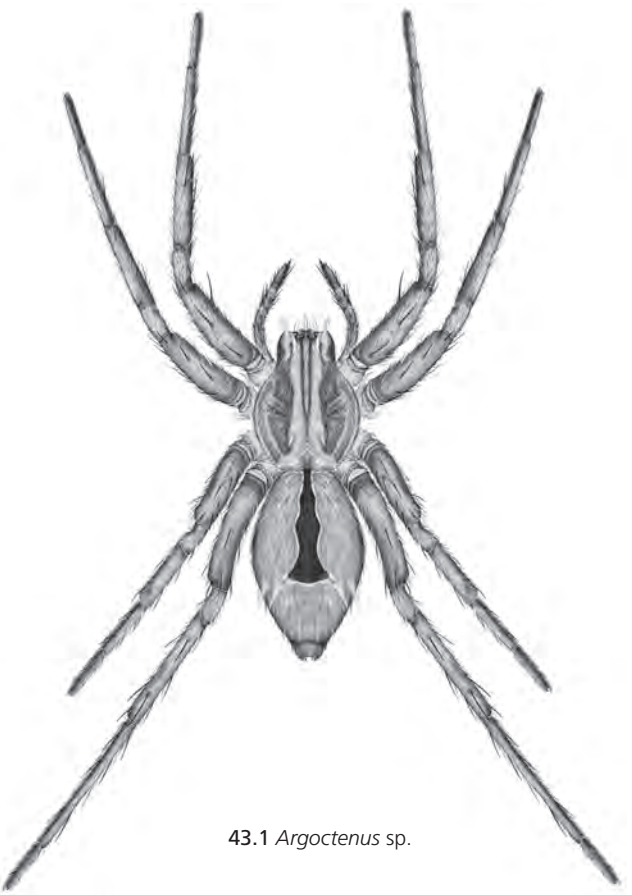
Classification and nomenclature notes

The New Zealand species were originally placed in Ctenidae. *Argoctenus aureus* was previously placed in *Nemoctenus*. The species listed here as *Argoctenus* were originally described in *Horioctenoides* and were based on females. The subsequent discovery of a male (still undescribed) suggested that it was congeneric with *A. aureus*, and therefore included in the same genus. *Argoctenus aureus* has been mispelled *Argoctenus aurens* in Bryant (1935d) and Forster & Wilton (1973). The published illustrations of *Argoctenus* (see Forster & Wilton 1973, Figs 1034, 1036, 1037) suggest that several species exist and that they are best treated as distinct entities. The specimens illustrated here could not be assigned with confidence to any name and are left undetermined. This suggests a minimum of four undescribed species.

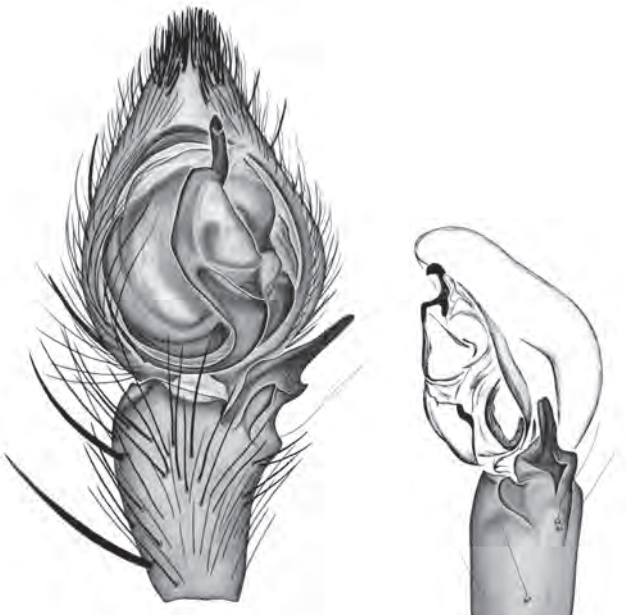
Species list

ZORIDAE F.O. Pickard-Cambridge 1893c:132
Argoctenus L. Koch 1878a:990
[NI] *Argoctenus aureus* (Hogg 1911:306)

Undetermined / undescribed taxa
[NI] *Argoctenus* sp. a **Figs 43.1, 4**
[NI] *Argoctenus* sp. b **Figs 43.2–3**



43.1 *Argoctenus* sp.



43.2

43.3

43.4

Salticidae

Diversity

17 genera, 30 species.

Summary description

Minute to large araneomorphs (1–15 mm), entelegyne, ecribellate, 2 claws, 8 eyes.

Diagnosis

Square fronted carapace with 4 forwardly directed eyes, of which the anterior median eyes (AME) are very large (Figs 44.1–44.2).

Similar families

No other family has a similar eye pattern. **Deinopidae**, however, may be mistaken for Salticidae, but have enlarged posterior median eyes (anterior median eyes are enlarged in Salticidae).

Taxonomic notes

The state of taxonomy for Salticidae is comparable to that of Theridiidae and badly needs attention. Żabka & Pollard (2003b) summarised the situation in stating that fewer than ten species are easily recognisable, usually under incorrect generic names; the lack of type specimens, poorly documented original descriptions, great intraspecific variation in size and colour, and interspecific uniformity in genitalic structure make identification of species very difficult. A few taxa have received adequate attention: *Hypoblemum* (Żabka & Pollard 2003a), *Hinewaia* (Żabka & Pollard 2002), *Adoxotoma forsteri* (Żabka 2004). *Clynotis* species are recognisable based on Forster (1964b), but apparently misplaced in the genus. Nonetheless, Żabka & Pollard (2003b) provided a checklist of New Zealand Salticidae and comments on taxonomy and distribution. Żabka *et al.* (2002) predicted the salticid fauna of New Zealand consists of about 30 genera and 200 species.

Key references

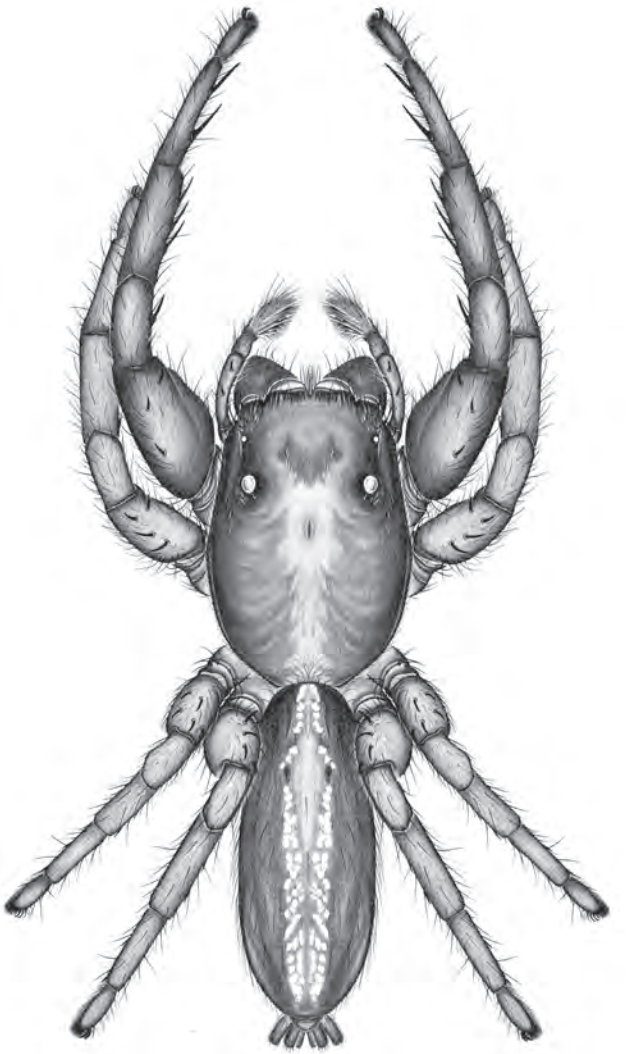
Forster 1964b, Davies & Żabka 1989, Żabka & Pollard 2002, 2003a, 2003b, Żabka 2004.

Endemicity, habitat and distribution

Due to taxonomic limitations, few taxa can be covered here. Some introduced species are suspected to be good dispersers (*Bianor maculatus* and *Helpis minitabunda*) and/or introduced because of their association with humans (*Hasarius adansoni* and *Hypoblemum albovittatum*). *Hasarius adansoni* has a cosmopolitan distribution. The salticid fauna is highly endemic at both the generic and species levels (Żabka *et al.* 2002). Except for some ancestral groups not found in New Zealand, Salticidae do not build webs; they are diurnal cursorial hunters. They are typically found in well-exposed sunny habitats (e.g. rock cliffs, foliage but *Marpissa marina* is a sea shore dweller). Many species are found in native forest habitats (litter, moss, tree trunks). Żabka & Pollard (2003b) documented the distribution of all species, while Żabka *et al.* (2002) discussed zoographical affinities of New Zealand Salticidae.

Classification and nomenclature notes

Twenty-one species included in *Attus* and *Salticus* in Żabka & Pollard (2003b) are treated as *nomina dubia* in Platnick (2010). These names are excluded from the present list on that basis: *Attus abbreviatus* Walckenaer 1837:477, *Attus aquilus* Urquhart 1886:115, *Attus cooki* Walckenaer 1837:478, *Attus monticolus* Urquhart 1891a:186, *Attus montinus* Urquhart 1891a:184, *Attus pullus* Urquhart 1890c:263, *Attus scindus* Urquhart 1890c:264, *Attus subfuscus* Urquhart 1887:117, *Attus tenebrosus* Urquhart 1893a:188, and *Attus valentulus* Urquhart 1891a:187, *Salticus albobarbatus* Powell 1873:286, *Salticus albopalpis* Urquhart 1885:49, *Salticus alpinus* Urquhart 1885:48, *Salticus atratus* Powell 1873:283, *Salticus curvus* Urquhart 1885:46, *Salticus fumosus* Powell 1873:284, *Salticus furvus* Urquhart 1885:47, *Salticus tabinus* Urquhart 1885:46, *Salticus tenebricus* Urquhart 1885:51, *Salticus v-notatus* Powell 1873:284, and *Salticus zanthrofrontalis* Urquhart 1885:45. *Trite minax* (Powell 1873) is a junior synonym of *Trite planiceps*.

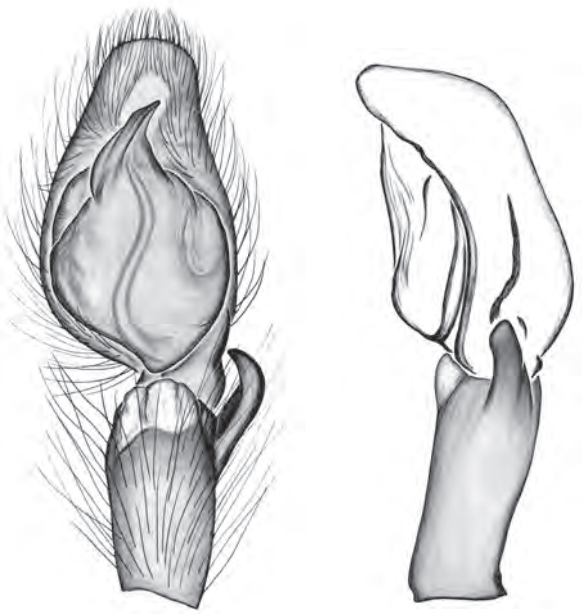


44.1 *Trite planiceps* (Simon 1899)

44.2

Species list

SALTICIDAE Blackwall 1841a:616
- *Adoxotoma* Simon 1909d:196
  - *Adoxotoma forsteri* Żabka 2004:593
- *Bianor* Peckham & Peckham 1885c:284
  - *Bianor compactus* (Urquhart 1885:50)
- [NI] **Bianor maculatus* (Keyserling 1883b:1447)
- *Clynotis* Simon 1901a:600
- AU, CA *Clynotis barresi* Hogg 1909:176
- SN *Clynotis knoxi* Forster 1964b:105
  - *Clynotis saxatilis* (Urquhart 1886:204)
- *Cosmophasis* Simon 1901a:542
- AU *Cosmophasis archeyi* Berland 1931b:363
- *Hasarius* Simon 1871a:329
- [AI] *Hasarius adansoni* (Audouin 1826:404)
- *Helpis* Simon 1901a:438
- [AI] **Helpis minitabunda* (L. Koch 1880:116) **Figs 44.3–5**
- *Hinewaia* Żabka & Pollard 2002:598
  - **Hinewaia embolica* Żabka & Pollard 2002:598
- *Holoplatys* Simon 1885b:88
- [NI] *Holoplatys appressus* (Powell 1873:281)
- [RLE] *Holoplatys planissima* (L. Koch 1879a:1100)
- *Hypoblemum* Peckham & Peckham 1885c:326
- [AI] *Hypoblemum albovittatum* (Keyserling 1882a:1407) **Figs 44.6–8**
- *Jotus* L. Koch 1881a:1243
  - *Jotus ravus* (Urquhart 1893a:185)
- *Laufeia* Simon 1889d:248
  - *Laufeia aerihirta* (Urquhart 1888:124)
- *Marpissa* C.L. Koch 1846b:56
  - *Marpissa arenaria* Urquhart 1888:123
  - *Marpissa armifera* Urquhart 1892b:248
  - *Marpissa cineracea* Urquhart 1891a:188
  - *Marpissa leucophaea* Urquhart 1888:121
  - *Marpissa marina* (Goyen 1892:253)
  - *Marpissa nemoralis* Urquhart 1892b:250
- *Ocrisiona* Simon 1901a:608
  - *Ocrisiona cinerea* (L. Koch 1879a:1112)
- [RLE] **Ocrisiona leucocomis* (L. Koch 1879a:1096)
- *Plexippus* C.L. Koch 1846c:107
  - *Plexippus sylvarus* Urquhart 1892b:252
- *Trite* Simon 1885b:91
  - *Trite auricoma* (Urquhart 1886:202) **Figs 44.9–10**
  - *Trite herbigrada* (Urquhart 1889a:150)
  - *Trite mustilina* (Powell 1873:285)
  - *Trite parvula* (Bryant 1935d:90)
  - *Trite planiceps* (Simon 1899b:430) **Fig. 44.1, 11**
  - *Trite urvillei* (de Dalmas 1917a:417)



44.3 44.4

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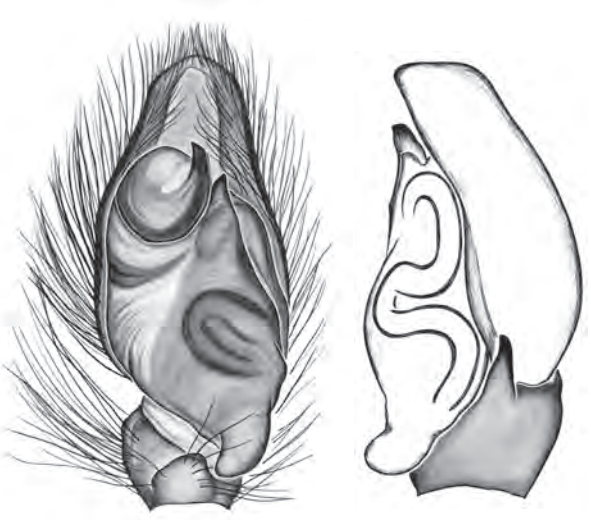
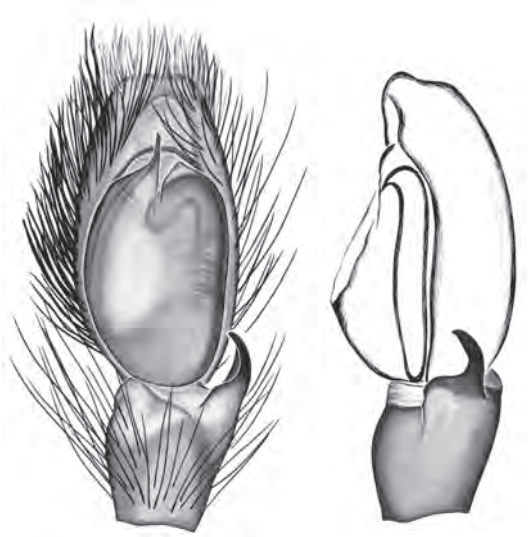
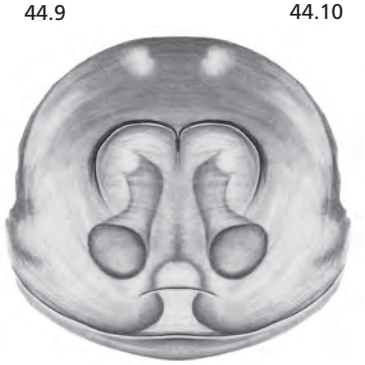


44.6 44.7

44.8



44.9 44.10



44.11

Thomisidae

Diversity

4 genera, 9 species.

Summary description

Small to medium-sized araneomorphs (4.0–12.0 mm), entelegyne, ecribellate, 2 claws, 8 eyes.

Diagnosis

Legs laterigrade (Fig. 45.1); legs I and II stout, longer than III and IV (Fig. 45.1); lateral eyes usually on tubercles; *Sidymella* have a distinctive triangular abdomen (Fig. 45.1).

Similar families

Sparassidae are also laterigrade but much larger (> 12 mm) (Thomisidae < 12 mm); a membranous trilobed dorso-apical extension is present on the metatarsus (absent in Thomisidae).

Taxonomic notes

The family has received little taxonomic attention so far, and at least 15 undescribed species are suspected (P.J. Sirvid, pers. comm.). The generic placement of the New Zealand species remains to be formally addressed.

Key reference

Forster & Forster (1999).

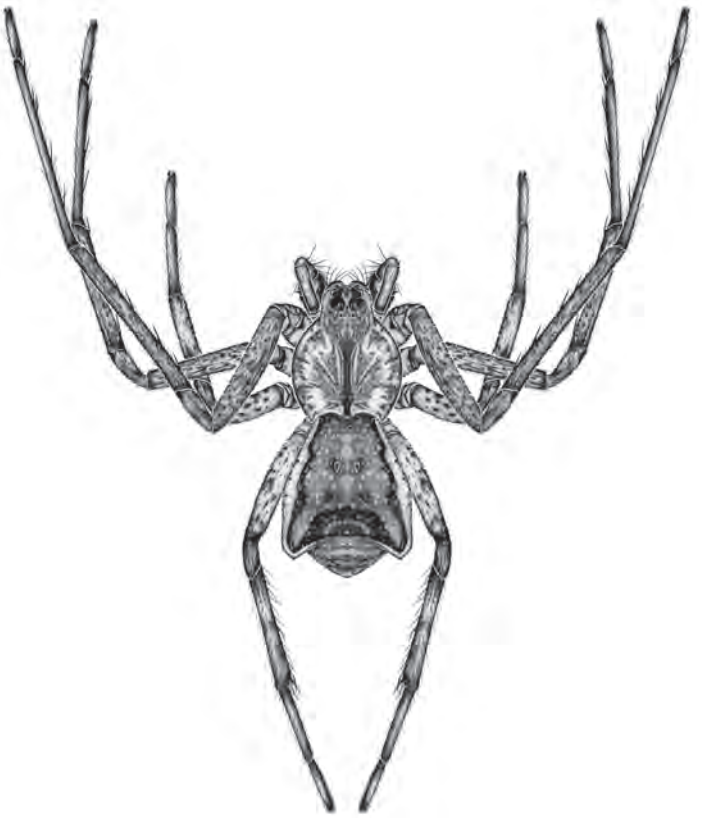
Endemicity, habitat and distribution

Cymbachina is a monotypic genus endemic to New Zealand, *Diaea* is widespread, *Sidymella* is known from South America and Australasia, *Sidymella longipes* is also known from Australia and the status and validity of *Synema suteri* remains uncertain. While there are no doubts that most of the fauna is endemic at the species level, further taxonomic work may show that these species belong in endemic genera. Thomisidae are roughly divided in two ecomorphic groups: a brighly coloured group (red, green, yellow, e.g. *Diaea*) usually found among flowers and vegetation in open habitats, and a darkly coloured group that mimics the colour and texture of logs, tree trunks and detritus (*Sidymella*) and lichens (*Cymbachina)*. These are mainly associated with native forests where they live on the forest floor. Thomisidae are vagrant spiders and typically ambush their prey. Jackson *et al*. (1995) reported the use of a prey web for New Zealand *Diaea*. *Sidymella angularis* is the largest species and is commonly found on both islands (P.J. Sirvid, pers. comm). No precise distribution data are available yet. Paquin *et al*. (2008d) concluded that *Philodromus rubrofrontus* Urquhart 1891 probably belongs in *Diaea,* but the name is best treated as a *nomen dubium,* and that *Tharpyna munda* L. Koch 1875a is an erroneous record for New Zealand.

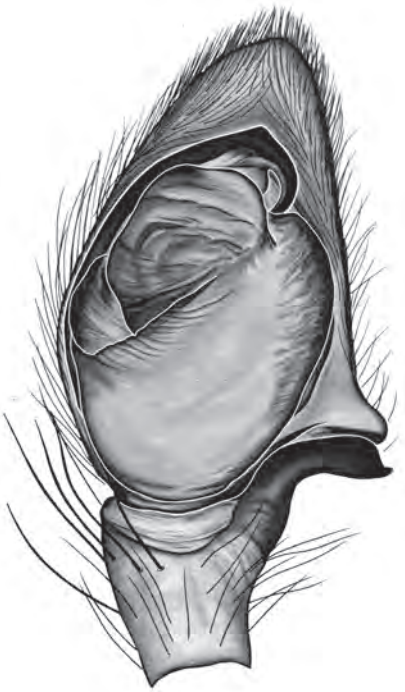
Species list

THOMISIDAE Sundevall 1833b:27
- *Cymbachina* Bryant 1933b:3
  - **Cymbachina albobrunnea* (Urquhart 1893a:184)
- *Diaea* Thorell 1869:184
  - *Diaea albolimbata* L. Koch 1875a:588
  - *Diaea ambara* (Urquhart 1885:43)
  - *Diaea sphaeroides* (Urquhart 1885:44)
- *Sidymella* Strand 1942:399
  - *Sidymella angularis* (Urquhart 1885:43)
  - *Sidymella angulata* (Urquhart 1885:42)
  - *Sidymella benhami* (Hogg 1910a:275)
  - [NI] *Sidymella longipes* (L. Koch 1874a:518)
- *Synema* Simon 1864:433
  - *Synema suteri* Dahl 1907a:381

Undetermined / undescribed taxa
- *Diaea* sp. **Fig. 45.4**
- *Sidymella* sp. **Figs 45.1–3**



45.1 *Sidymella* sp.



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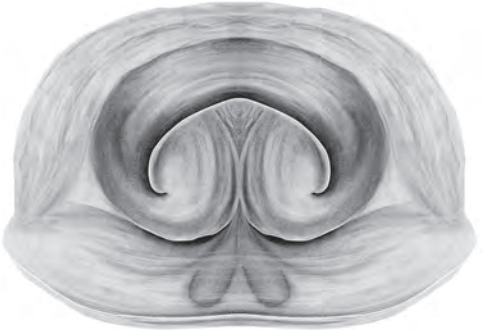


45.4

Lamponidae

Diversity

1 genus, 2 species.

Summary description

Medium to large araneomorphs (9.2–17.0 mm), entelegyne, ecribellate, 2 claws, 8 eyes.

Diagnosis

Posterior tip of abdomen typically with a white spot (Fig. 46.1), which can be greyish; presence of a pair of invaginated ventral sclerites behind the epigastric furrow (Fig. 46.3); chelicerae obliquely depressed with a conspicuous groove along the median margin of the endite (Fig. 46.2).

Similar families

Gnaphosidae have no groove along the median margin of the endite (present in Lamponidae); smaller anterior median eyes (AME) (larger in Lamponidae); no white or grey spot at the tip of the abdomen (present in Lamponidae). **Corinnidae** (i.e. *Supunna picta*) have a highly distinctive abdominal pattern.

Taxonomic notes

The species known in New Zealand are introduced from Australia and the chances of discovering endemic species are very low.

Key reference

Platnick 2000a.

Endemicity, habitat and distribution

Both species were introduced from Australia, probably in the early days of colonisation (Banks *et al.* 2004). *Lampona* spp. are most active during night-time and are often found in and around houses hunting for other spiders, particularly *Badumna* spp. (Desidae) (Forster 1979). In Australia, *Lampona cylindrata* is found in southern latitudes while *Lampona murina* is restricted to Eastern Australia (Platnick 2000a); there is little distribution overlap. *Lampona murina* is known only from the North Island, while *L. cylindrata* is restricted to the South Island.

Additional note

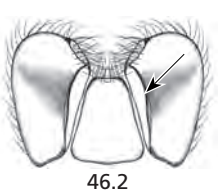
The bites of *Lampona* spp. (white-tail spiders) are painful and can result in skin lesions, but none have caused necrotic ulcers they have erroneously been blamed for (Isbister & Gray 2003, Banks *et al.* 2004, Derraik *et al.* 2008, Rademaker & Derraik 2009).

Classification and nomenclature note

Lampona spp. were previously placed in Gnaphosidae.

Species list

LAMPONIDAE Simon 1893a:349
Lamponinae Simon 1893a:349
Lampona Thorell 1869:37
[AI] **Lampona cylindrata* (L. Koch 1866a:3) **Figs 46.7–9**
[AI] *Lampona murina* L. Koch 1873a:378 **Figs 46.1, 4–6**



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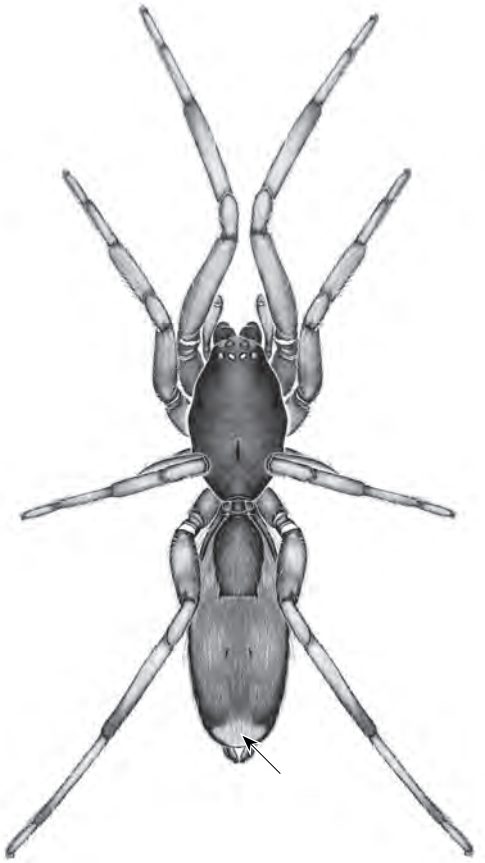
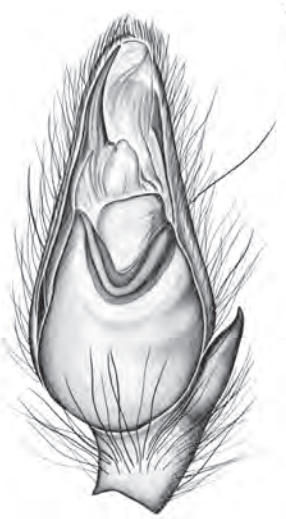


46.1 *Lampona murina* L. Koch 1873



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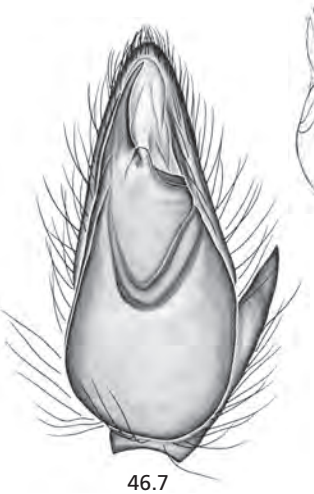

46.7

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Gnaphosidae

Diversity

10 genera, 24 species.

Summary description

Small to large araneomorphs (2.5–16.0 mm), entelegyne, ecribellate, 2 claws, 8 eyes.

Diagnosis

Anterior lateral spinnerets distinctly cylindrical and widely separated at base (Fig. 47.2); endites with an oblique depression (Fig. 47.3).

Similar families

Lamponidae have a distinct groove on the median margin of the endites (no grooves in Gnaphosidae); tip of abdomen with a distinct white or grey spot (absent in Gnaphosidae). **Clubionidae** have conical spinnerets (cylindrical in Gnaphosidae).

Taxonomic notes

The discovery of additional species in New Zealand is possible, but seems unlikely. Many species are known from one sex only: the females of *Hypodrassodes isopus*, *Zelanda titirangia*, *Kaitawa insulare* and the males of *Hypodrassodes apicus, Hypodrassodes crassus, Hypodrassodes insulanus* are still unknown. Forster (1979) suggested that *Scotophaeus pretiosus* might be a synonym of the cosmopolitan *Scotophaeus blackwallii* (Thorell 1871a). Close examination of specimens from Europe and New Zealand revealed that they are distinct species.

Key references

Forster 1979, Ovtsharenko & Platnick 1995, Forster & Forster 1999, Ovtsharenko *et al*. 2006.

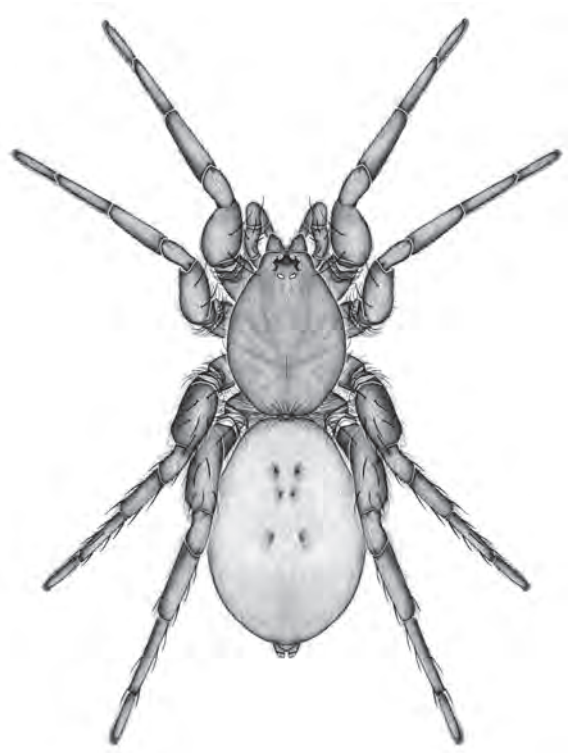
Endemicity, habitat and distribution

Notiodrassus, Nauhea, Matua are endemic genera. *Hypodrassodes* has a wide distribution with allopatric speciation, but *Notiodrassus*, *Matua* and *Kaitawa* display the classic relict distribution of many endemic groups (Forster 1979). The remaining genera may be more recent colonisers but not necessarily post-European; these species are usually associated with disturbed and open habitats. *Nauhea tapa* is an endemic species associated with tussock and subalpine habitats that may have successfully expanded its range to pastoral conditions. *Anzacia gemmea* is widespread in New Zealand and reported also from Philip Island (Norfolk Islands) (Ovtsharenko & Platnick 1995). *Hypodrassodes* occurs in the North Island but *Hypodrassodes maoricus* is also known from the northern part of the South Island. *Zelanda* is found throughout New Zealand and Australia, *Matua* is known only from the South Island, while *Notiodrassus* is restricted to the southern part of the South Island. *Hemicloea rogenhoferi* is introduced from Australia, widespread and found under loose bark and in crevices of trees. *Kaitawa insulare* is known only from Three Kings Islands.

New Zealand Gnaphosidae are mainly found in forest in leaf litter, under logs, bark and stones but sometimes in disturbed habitat under logs and stones, particularly the introduced species. *Anzacia gemmea* is not associated with forests but with open counrty. *Intruda signata* is introduced from Australia and has been found on shores and in grass near a garden of the North Island.

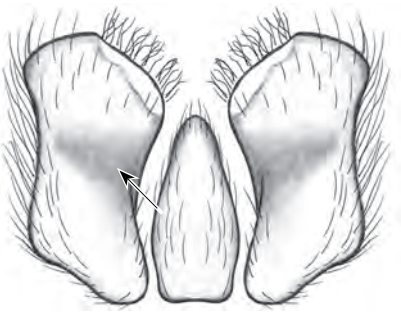
Classification and nomenclature notes

Zelanda is a replacement name for *Taieria* Forster 1979, pre-occupied in Gastropoda (Özdikmen 2009). *Kaitawa insulare* was originally described in Clubionidae by Marples (1956) and transferred to Gnaphosidae by Forster (1979). Even though the spinneret and endite characters lead to Gnaphosidae in the family key, its placement is questioned (N.I. Platnick, pers. comm.) It seems best, however, to leave it as is until a better alternative can be substantiated.



47.1 *Zelanda erebus* (L. Koch 1873)

47.2



47.3

Species list

GNAPHOSIDAE Simon 1893a:379
- *Anzacia* de Dalmas 1919b:249
  - *Anzacia gemmea* (de Dalmas 1917a:345)
- *Hemicloea* Thorell 1870c:380
  - [AI] *Hemicloea rogenhoferi* L. Koch 1875a:637 **Figs 47.5–7**
  - [RLE] *Hemicloea sundevallii* Thorell 1870c:381
- *Hypodrassodes* de Dalmas 1919b:250
  - *Hypodrassodes apicus* Forster 1979:47
  - *Hypodrassodes courti* Forster 1979:43
  - *Hypodrassodes crassus* Forster1979:45
  - *Hypodrassodes dalmasi* Forster 1979:45

Hypodrassodes insulanus Forster 1979:48
Hypodrassodes isopus Forster 1979:46
Hypodrassodes maoricus* (de Dalmas 1917a:346) **Figs 47.11–12
Intruda Forster 1979:66
[AI] **Intruda signata* (Hogg 1900:93)
Kaitawa Forster 1979:59
**Kaitawa insulare* (Marples 1956:332)
Matua Forster 1979:57
Matua festiva Forster 1979:58
**Matua valida* Forster 1979:57
Nauhea Forster 1979:60
**Nauhea tapa* Forster 1979:60
Notiodrassus Bryant 1935d:85
**Notiodrassus distinctus* Bryant 1935d:85
Notiodrassus fiordensis Forster 1979:55 **Figs 47.8–10**
Scotophaeus Simon 1893a:371
Scotophaeus pretiosus (L. Koch 1873a:385)
Zelanda Özdikmen 2009:122
Zelanda elongata (Forster 1979:50)
Zelanda erebus* (L. Koch 1873a:390) **Figs 47.1, 4
Zelanda kaituna (Forster 1979:52)
Zelanda miranda (Forster 1979:54)
Zelanda obtusa (Forster 1979:53)
Zelanda titirangia (Ovtsharenko, Fedoryak & Zakharov 2006:92)

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47.12

Stiphidiidae

Diversity

5 genera, 35 species.

Summary description

Small to large araneomorphs (5.0–19.2 mm), entelegyne, cribellate and ecribellate, 3 claws, 8 eyes.

Diagnosis

The family is difficult to diagnose. Male palp with a median apophysis that varies from a hook (*Ischalea*, Fig. 48.6) to reduced or totally absent (other genera, Figs 48.3, 48.9, 48.11); male palp cymbium greatly elongated (Figs 48.3, 48.6, 48.11), but *Stiphidion facetum* is an exception (Fig. 48.9); eyes in more or less straight rows (Figs 48.1, 48.2) except *Stiphidion facetum*; plumose setae present in *Cambridgea* and *Nanocambridgea*, but absent in *Procambridgea*, *Ischalea* and *Stiphidion*; cribellate (*Stiphidion, Procambridgea*) and ecribellate genera (*Cambridgea, Ischalea, Nanocambridgea*); epigynum a rather simple plate with a median protuberance or lateral spines (Figs 48.5, 48.8, 48.13).

Similar families

Tetragnatha (Tetragnathidae) resembles *Ischalea* because of the elongated body and resting position, but can be differentiated by the haplogyne condition (entelegyne and a pair of epigynal projections in *Ischalea spinipes*, (Fig. 48.8). The elongated cymbium is characteristic of Stiphidiidae (except for *Stiphidion facetum,* Fig. 48.9).

Taxonomic note

The family has received taxonomic attention and most species have been described, but there is at least one undescribed species (A.D. Blest, pers. comm.).

Key references

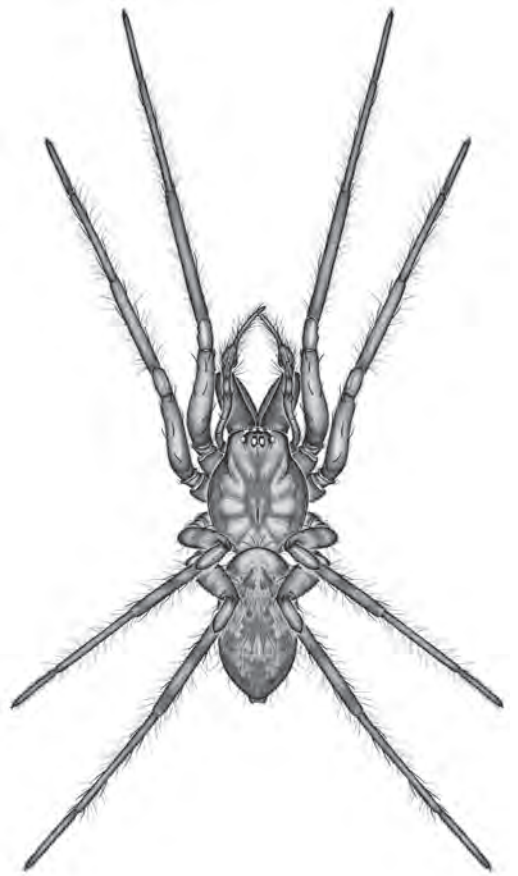
Forster & Wilton 1973, Davies 1988a, Forster & Forster 1999, Blest & Vink 2000, Davies & Lambkin 2001.

Endemicity, habitat and distribution

Procambridgea grayi and *Stiphidion facetum* have both been introduced from Australia and reported from the North Island (Forster & Wilton 1973, Davies & Lambkin 2001). The genus *Ischalea* is known from Mauritius and Madagascar, *Cambridgea* from New Caledonia (Berland 1924a), but *Nanocambridgea* is an endemic genus. *Stiphidion* constructs a large inverted cone with threads attached to its margin. *Cambridgea* and *Nanocambridgea* spin large horizontal sheet webs measuring up to one square metre for the larger species. The spiders move on the underside of the web waiting for prey near a retreat at the edge. *Ischalea* do not build snares. Stiphidiidae are largely nocturnal and difficult to see during the day. The males of many species have a stridulatory system associated with the pedicel of the abdomen. They are known from forests where they spin webs in the vegetation, against logs and tree trunks, but are also found in gardens.

Species list

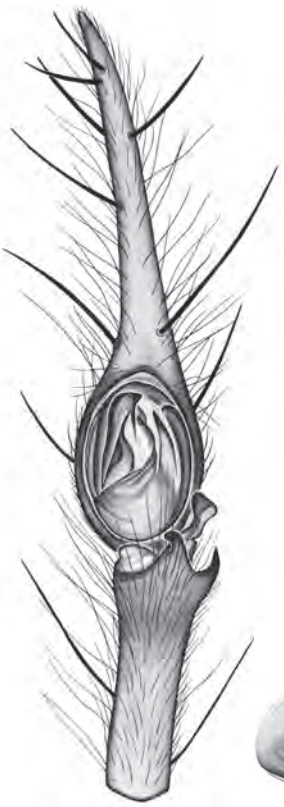
STIPHIDIIDAE de Dalmas 1917a:325
- *Cambridgea* L. Koch 1872a:358
  - *Cambridgea agrestis* Forster & Wilton 1973:141
  - *Cambridgea ambigua* Blest & Vink 2000:5
  - CH *Cambridgea annulata* de Dalmas 1917a:402
  - **Cambridgea antipodiana* (White 1849:5)
  - *Cambridgea arboricola* (Urquhart 1891a:129)
  - *Cambridgea australis* Blest & Vink 2000:7
  - *Cambridgea decorata* Blest & Vink 2000:17
  - *Cambridgea elegans* Blest & Vink 2000:20



48.1 *Cambridgea quadromaculata* Blest & Taylor 1995

48.2

  - *Cambridgea elongata* Blest & Vink 2000:12
  - *Cambridgea fasciata* L. Koch 1872a:359
  - *Cambridgea foliata* (L. Koch 1872a:356)
  - *Cambridgea inaequalis* Blest & Vink 2000:11
  - *Cambridgea insulana* Blest & Vink 2000:16
  - *Cambridgea longipes* Blest & Vink 2000:13
  - *Cambridgea mercurialis* Blest & Vink 2000:17
  - *Cambridgea obscura* Blest & Vink 2000:14
  - *Cambridgea occidentalis* Forster & Wilton 1973:146
  - *Cambridgea ordishi* Blest & Vink 2000:20
  - *Cambridgea pallidula* Blest & Vink 2000:19
  - *Cambridgea peculiaris* Forster & Wilton 1973:146
  - *Cambridgea peelensis* Blest & Vink 2000:8
  - *Cambridgea plagiata* Forster & Wilton 1973:149
  - *Cambridgea quadromaculata* Blest & Taylor 1995:352 **Figs 48.1, 3–5**
  - *Cambridgea ramsayi* Forster & Wilton 1973:151
  - *Cambridgea reinga* Forster & Wilton 1973:151
  - *Cambridgea secunda* Forster & Wilton 1973:144
  - *Cambridgea solanderensis* Blest & Vink 2000:15
  - *Cambridgea sylvatica* Forster & Wilton 1973:146
  - *Cambridgea tuiae* Blest & Vink 2000:21
  - *Cambridgea turbotti* Forster & Wilton 1973:150
- *Ischalea* L. Koch 1872a:196
  - **Ischalea spinipes* L. Koch 1872a:197 **Figs 48.6–8**
- *Nanocambridgea* Forster & Wilton 1973:152
  - **Nanocambridgea gracilipes* Forster & Wilton 1973:154
  - *Nanocambridgea grandis* Blest & Vink 2000:21
- *Procambridgea* Forster & Wilton 1973:134
  - [AI] *Procambridgea grayi* Davies *in* Davies & Lambkin 2001:446 **Figs 48.11–13**
- *Stiphidion* Simon 1902c:242
  - [AI] **Stiphidion facetum* Simon 1902c:242 **Figs 48.9–10**



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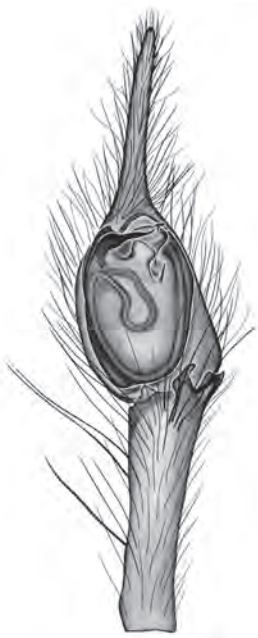


48.11

48.12

48.13

Agelenidae

Diversity

14 genera, 98 species.

Summary description

Minute to large araneomorphs (1.0–15.0 mm), entelegyne, cribellate and ecribellate, 3 claws, 8 eyes.

Diagnosis

Absence of trichobothria on the female palp and the cymbium of the male palp; conductor of the male palp usually well-developed and t-shaped (Fig. 49.8).

Similar families

Differentiating Agelenidae from Amaurobiidae, Desidae and Amphinectidae is difficult. However, they differ by the absence of trichobothria on both the female palp and the cymbium of the male palp. A few genera placed in **Amphinectidae,** however, share this character state. *Aorangia* (16 spp.) differ by their unique type of spinnerets (Fig. 51.2) and *Neolana* (3 spp.) have a distinctive terminal portion of the embolus (Fig. 51.6).

Taxonomic notes

The New Zealand Agelenidae have been revised (Forster & Wilton 1973), but given the limited distributions of most species, the discovery of additional species is likely. There are at least three *Mahura* and three *Orepukia* undescribed (P.J. Sirvid, pers. comm., B.M Fitzgerald, pers. comm.). The family Agelenidae has been defined by Northern Hemisphere taxa, and the placement of New Zealand endemic taxa in that family is problematic. Spagna & Gillespie (2008) provided molecular phylogenetic evidence that *Neoramia janus* does not belong in Agelenidae. Therefore, it seems best to consider the New Zealand taxa as a distinct clade until their correct placement is properly addressed.

Key references

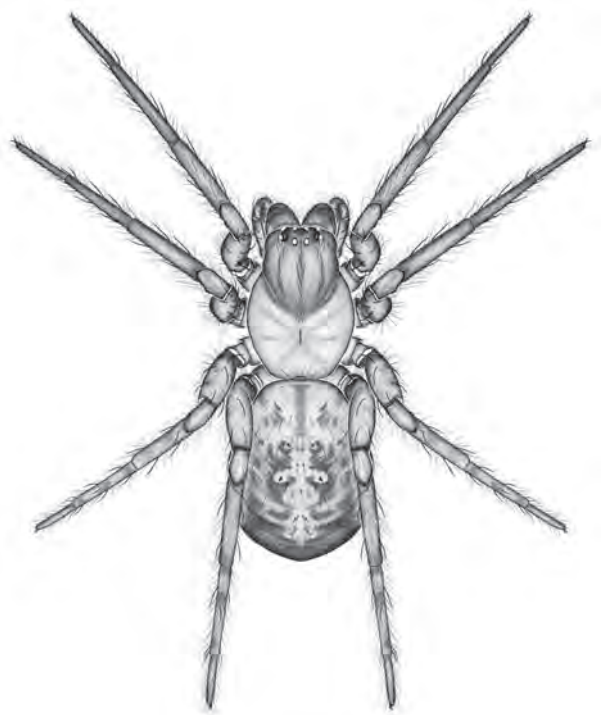
Forster & Wilton 1973, Forster & Forster 1999.

Endemicity, habitat and distribution

Tegenaria domestica is a cosmopolitan species associated with human habitations and is widespread in New Zealand. *Malthonica pagana* has been reported (Forster & Wilton 1973), but it is unlikely to be established. All other taxa are endemic. *Tegenaria domestica* typically spins a distinctive sheet web in houses. Forster & Forster (1999) stated that most endemic taxa do not make extensive use of webs. They are generally associated with the forest floor, in litter and moss. *Mahura* and *Neoramia* are also associated with alpine habitat and scree slopes. *Oramia* are found on the spray zone of shingle beaches where they construct snares amongst stones and against logs. *Orepukia* are mainly on the forest floor but also in gardens and in grasslands. *Huka* are minute and unpigmented spiders that live in mosses on the forest floor. *Tararua* are much brighter in colouration and actively hunt in low shrubs in forest and alpine scrub. Agelenidae have rather limited ranges and most species are found in the South Island. A few taxa, however, (*Oramiella, Huka*) are also known from the North Island. *Oramia rubrioides* was mistakenly recorded from Australia by Roewer (1955d).

Species list

AGELENIDAE C.L. Koch 1837g:13
Ageleninae Thorell 1870b:120
Malthonica Simon 1898a:258
[RnE] *Malthonica pagana* (C.L. Koch 1840c:31)
Tegenaria Latreille 1804b:134
[AI] *Tegenaria domestica* (Clerck 1758:76) **Figs 49.2–4**
New Zealand Clade
Ahua Forster & Wilton 1973:70
Ahua dentata Forster & Wilton 1973:71
Ahua insula Forster & Wilton 1973:73
Ahua kaituna Forster & Wilton 1973:70
**Ahua vulgaris* Forster & Wilton 1973:70
Huka Forster & Wilton 1973:80
Huka alba Forster & Wilton 1973:83
Huka lobata Forster & Wilton 1973:83
Huka minima Forster & Wilton 1973:83
Huka minuta Forster & Wilton 1973:81
**Huka pallida* Forster & Wilton 1973:80
Mahura Forster & Wilton 1973:48
Mahura accola Forster & Wilton 1973:52
Mahura bainhamensis Forster & Wilton 1973:62
Mahura boara Forster & Wilton 1973:50
Mahura crypta Forster & Wilton 1973:57
Mahura detrita Forster & Wilton 1973:51
Mahura hinua Forster & Wilton 1973:53
Mahura musca Forster & Wilton 1973:58
Mahura rubella Forster & Wilton 1973:61
Mahura rufula Forster & Wilton 1973:61
Mahura scuta Forster & Wilton 1973:60
Mahura sorenseni Forster & Wilton 1973:52
Mahura southgatei Forster & Wilton 1973:59
Mahura spinosa Forster & Wilton 1973:53 **Figs 49.8–10**
Mahura spinosoides Forster & Wilton 1973:54
Mahura takahea Forster & Wilton 1973:56
Mahura tarsa Forster & Wilton 1973:59
**Mahura turris* Forster & Wilton 1973:48
Mahura vella Forster & Wilton 1973:55
Neoramia Forster & Wilton:93
Neoramia allanae Forster & Wilton:116
Neoramia alta Forster & Wilton:122
**Neoramia charybdis* (Hogg 1910a:273)
Neoramia childi Forster & Wilton 1973:106
AU *Neoramia crucifera* (Hogg 1909:169)
Neoramia finschi (L. Koch 1872a:339)
Neoramia fiordensis Forster & Wilton 1973:118
CA *Neoramia hoggi* (Forster 1964b:62)
Neoramia hokina Forster & Wilton 1973:116
Neoramia janus (Bryant 1935d:72)
Neoramia koha Forster & Wilton 1973:124
Neoramia komata Forster & Wilton 1973:120
Neoramia mamoea Forster & Wilton 1973:109
Neoramia marama Forster & Wilton 1973:113
Neoramia margaretae Forster & Wilton 1973:121
Neoramia matua Forster & Wilton 1973:110
Neoramia minuta Forster & Wilton 1973:115
Neoramia nana Forster & Wilton 1973:112
Neoramia oroua Forster & Wilton 1973:104 **Fig. 49.1**
Neoramia otagoa Forster & Wilton 1973:117
Neoramia raua Forster & Wilton 1973:112
Neoramia setosa (Bryant 1935d:73) **Figs 49.5–7**



49.1 *Neoramia oroua* Forster & Wilton 1973

Neorepukia Forster & Wilton 1973:46
Neorepukia hama Forster & Wilton 1973:46
**Neorepukia pilama* Forster & Wilton 1973:46
Oramia Forster 1964b:59
CH *Oramia chathamensis* (Simon 1899b:433)
Oramia littoralis Forster & Wilton 1973:90
Oramia mackerrowi (Marples 1959:341)
AU *Oramia marplesi* Forster 1964b:63
Oramia occidentalis (Marples 1959:340)
SN **Oramia rubrioides* (Hogg 1909:159)
Oramia solanderensis Forster & Wilton 1973:91
Oramiella Forster & Wilton 1973:84
**Oramiella wisei* Forster & Wilton 1973:84
Orepukia Forster & Wilton 1973:25
Orepukia alta Forster & Wilton 1973:44
Orepukia catlinensis Forster & Wilton 1973:33
Orepukia dugdalei Forster & Wilton 1973:35
Orepukia egmontensis Forster & Wilton 1973:29
Orepukia florae Forster & Wilton 1973:40
Orepukia geophila Forster & Wilton 1973:42
Orepukia grisea Forster & Wilton 1973:43
Orepukia insula Forster & Wilton 1973:41
Orepukia nota Forster & Wilton 1973:39
AN *Orepukia nummosa* (Hogg 1909:167)
Orepukia orophila Forster & Wilton 1973:30
Orepukia pallida Forster & Wilton 1973:31
Orepukia poppelwelli Forster & Wilton 1973:32
Orepukia prina Forster & Wilton 1973:38
Orepukia rakiura Forster & Wilton 1973:36
Orepukia redacta Forster & Wilton 1973:34
Orepukia riparia Forster & Wilton 1973:27
Orepukia sabua Forster & Wilton 1973:45
Orepukia similis Forster & Wilton 1973:29
Orepukia simplex Forster & Wilton 1973:38
**Orepukia sorenseni* Forster & Wilton 1973:25
Orepukia tanea Forster & Wilton 1973:43
Orepukia tonga Forster & Wilton 1973:28
Orepukia virtuta Forster & Wilton 1973:35
Paramyro Forster & Wilton 1973:68.
**Paramyro apicus* Forster & Wilton 1973:68
Paramyro parapicus Forster & Wilton 1973:69
Porotaka Forster & Wilton 1973:63
**Porotaka detrita* Forster & Wilton 1973:64
Porotaka florae Forster & Wilton 1973:65
Tararua Forster & Wilton 1973:73
**Tararua celeripes* (Urquhart 1891a:132)
Tararua clara Forster & Wilton 1973:75
Tararua diversa Forster & Wilton 1973:76
Tararua foordi Forster & Wilton 1973:77
Tararua puna Forster & Wilton 1973:79
Tararua ratuma Forster & Wilton 1973:78
Tararua versuta Forster & Wilton 1973:78
Tuapoka Forster & Wilton 1973:65
Tuapoka cavata Forster & Wilton 1973:67
**Tuapoka ovalis* Forster & Wilton 1973:6

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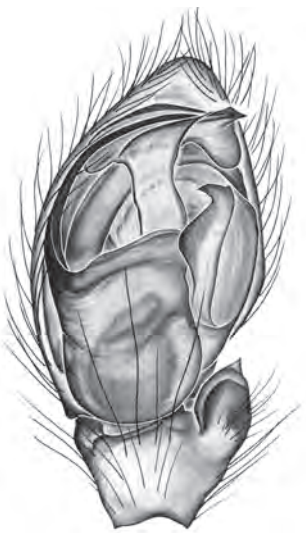
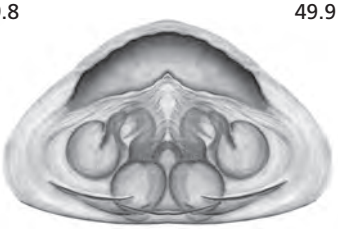


49.8

49.9



49.10

Desidae

Diversity

22 genera, 96 species.

Summary description

Minute to medium araneomorphs (1.0–11.0 mm), entelegyne, cribellate and ecribellate, 3 claws, 8 or 6 eyes.

Diagnosis

Difficult to diagnose. The median pair of tracheae (internal respiratory system) is strongly branched and divided (Forster 1970b:12); male palp with a hooked median apophysis, when present.

Similar families

Differentiating Desidae from Agelenidae, Amphinectidae and Amaurobiidae is difficult/impossible. The configuration of the tracheal system was important in the definition of the limits of these families. In Amaurobioidea (Amaurobiidae, Amphinectidae and Agelenidae) the tracheae are slender and unbranched while in Dictynoidea (Desidae), at least the median pair is strongly branched and divided. These characters may be phylogenetically important, but they do not correspond to external somatic and genitalic characters that are commonly used for identification. The taxonomy of these families, particularly Desidae, is confusing and requires attention.

Taxonomic notes

The New Zealand Desidae have been revised (Forster 1970b, Forster & Wilton 1973), but given the limited distribution of most species, the discovery of new taxa is likely. Many species are known only from one sex.

Key references

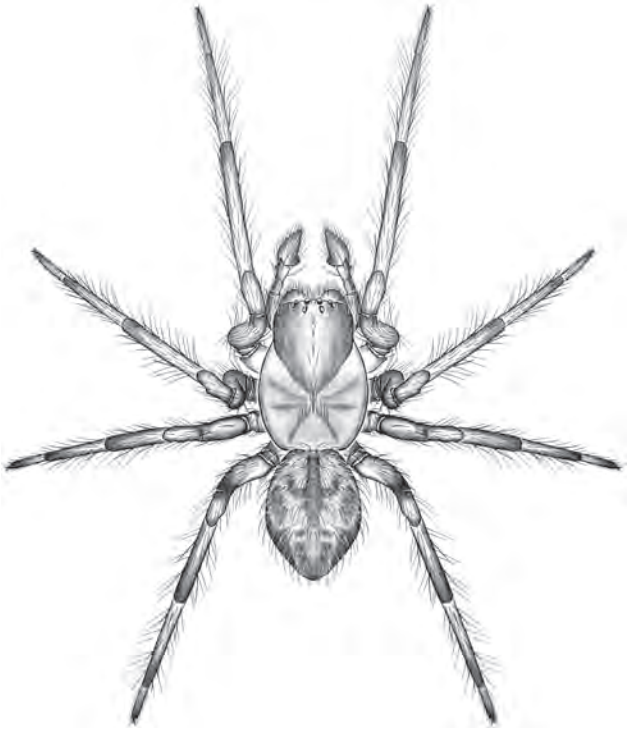
Forster 1970b, Forster & Wilton 1973.

Endemicity, habitat and distribution

Badumna insignis and *B. longinqua* are the most common species in New Zealand. Their distribution includes Australia (where they originate from), South East Asia, North and South America (Gray 1983a, Platnick 2010). *Desis marina* is reported from the Chatham Islands and New Caledonia. All other taxa are endemic, except the genera *Laestrygones* and *Myro,* which are also known from Australia (Hickman 1969) and the subantarctic islands (Ledoux 1991). Some Desidae are known for their specialisation in marine habitats: *Desis* lives in the intertidal zone while *Myro*, *Otagoa* and some *Gasparia* are found in the narrow strip immediately above high tide level. Most other genera are associated with forest and vegetation. *Matachia* and *Notomatachia* have morphological adaptations – elongated body form, porrect chelicerae, orientation of legs – for life in hollow twigs and other burrows in the vegetation, around which they spin dictynoid-type webs. *Panoa, Gohia* and *Mangareia* spin webs near the ground in forest or in low shrubs and grass, while *Helsonia, Hapona, Nuisiana, Tuakana, Lamina*, *Mesudus* and Toxopinae are arboreal hunters. *Toxopsoides huttoni* and *Neomyro* are found in forest litter, under logs and stones and are vagrant hunters. Desidae are widespread, but the diversity is greatest in the South Island.

Classification and nomenclature notes

Manawa Forster 1970b was pre-occupied in Crustacea and has been replaced by *Mesudus* Özdikmen 2007. *Badumna insignis* and *Badumna longinqua* were previously known as *Ixeuticus robustus* (L. Koch 1872a) and *Ixeuticus martius* (Simon 1899b), respectively.



50.1 *Badumna longinqua* (L. Koch 1867)

Species list

DESIDAE Pocock 1895b:143

Desinae Pocock 1895b:143

Badumna Thorell 1890a:323

[AI] *Badumna insignis* (L. Koch 1872a:330) **Figs 50.2–4**

[AI] *Badumna longinqua* (L. Koch 1867b:196) **Figs 50.1, 5–7**

Desis Walckenaer 1837:611

[NI], NZ, CH *Desis marina* (Hector 1877:300)

Goyenia Forster 1970b:40

**Goyenia electa* Forster 1970b:42

Goyenia fresa Forster 1970b:44

Goyenia gratiosa Forster 1970b:45

Goyenia lucrosa Forster 1970b:46

Goyenia marplesi Forster 1970b:49

Goyenia multidentata Forster 1970b:47

Goyenia ornata Forster 1970b:43

Goyenia sana Forster 1970b:46

Goyenia scitula Forster 1970b:49

Goyenia sylvatica Forster 1970b:47

Helsonia Forster 1970b:50

**Helsonia plata* Forster 1970b:50

Mangareia Forster 1970b:59

**Mangareia maculata* Forster 1970b:59

Mangareia motu Forster 1970b:61

Matachia de Dalmas 1917a:326

Matachia australis Forster 1970b:29

Matachia livor (Urquhart 1893a:167)

Matachia magna Forster 1970b:32

Matachia marplesi Forster 1970b:32

**Matachia ramulicola* de Dalmas 1917a:328

Matachia similis Forster 1970b:30

Mesudus Özdikmen 2007:137

Mesudus frondosus (Forster 1970b:53)

Mesudus setosus (Forster 1970b:53)

**Mesudus solitarius* (Forster 1970b:51)

Notomatachia Forster 1970b: 33

Notomatachia cantuaria Forster 1970b:35 **Figs 50.8–10**

**Notomatachia hirsuta* (Marples 1962:706)

Notomatachia wiltoni Forster 1970b:36

Nuisiana Forster & Wilton 1973:301

**Nuisiana arboris* (Marples 1959:352)

Panoa Forster 1970b:37

**Panoa contorta* Forster 1970b:38

Panoa fiordensis Forster 1970b:39

Panoa mora Forster 1970b:39

Panoa tapanuiensis Forster 1970b:40

Rapua Forster 1970b:54

**Rapua australis* Forster 1970b:55

Tuakana Forster 1970b:56

Tuakana mirada Forster 1970b:58

**Tuakana wiltoni* Forster 1970b:56

Myroninae Lehtinen 1967:327

Gasparia Marples 1956:334

Gasparia busa Forster 1970b:95

Gasparia coriacea Forster 1970b:98
AN, AU, CA *Gasparia delli* (Forster 1955c:195)
Gasparia dentata Forster 1970b:92
Gasparia edwardsi Forster 1970b:103
CH *Gasparia kaiangaroa* Forster 1970b:95
Gasparia littoralis Forster 1970b:89
Gasparia lomasi Forster 1970b:94
Gasparia mangamuka Forster 1970b:87
SN *Gasparia manneringi* (Forster 1964b:71)
Gasparia montana Forster 1970b:88
Gasparia nava Forster 1970b:85
TH **Gasparia nebulosa* Marples 1956:334
Gasparia nelsonensis Forster 1970b:92
Gasparia nuntia Forster 1970b:98
Gasparia oparara Forster 1970b:97
Gasparia parva Forster 1970b:104
Gasparia pluta Forster 1970b:91
Gasparia rupicola Forster 1970b:91
Gasparia rustica Forster 1970b:102 **Figs 50.11–12**
Gasparia tepakia Forster 1970b:99
Gasparia tuaiensis Forster 1970b:96
Gohia de Dalmas 1917a:403
CA *Gohia clarki* Forster 1964b:78
AU **Gohia falxiata* (Hogg 1909:170)
Gohia isolata Forster 1970b:83
Gohia parisolata Forster 1970b:82
Hulua Forster & Wilton 1973:302
**Hulua convoluta* Forster & Wilton 1973:303
Hulua manga Forster & Wilton 1973:305
Hulua minima Forster & Wilton 1973:305
Hulua pana Forster & Wilton 1973:305
Lamina Forster 1970b:106
**Lamina minor* Forster 1970b:106
Lamina montana Forster 1970b:107
Lamina parana Forster 1970b:108 **Figs 50.13–15**
Lamina ulva Forster 1970b:109
Myro O. Pickard-Cambridge 1876a:263
Myro marinus (Goyen 1890:269)
Neomyro Forster & Wilton 1973:306
Neomyro amplius Forster & Wilton 1973:307
Neomyro circe Forster & Wilton 1973:308
**Neomyro scitulus* (Urquhart 1891a:135)
Otagoa Forster 1970b:76
Otagoa chathamensis Forster 1970b:79
Otagoa nova* Forster 1970b:76 **Figs 50.21–23
Otagoa wiltoni Forster 1970b:79

Toxopinae Hickman 1940:125
Hapona Forster 1970b:112
Hapona amira Forster 1970b:120
Hapona aucklandensis (Forster 1964a:138)
Hapona crypta (Forster 1964a:132)
Hapona insula (Forster 1964a:136)
Hapona marplesi (Forster 1964a:135)
Hapona moana Forster 1970b:118
Hapona momona Forster 1970b:120
Hapona muscicola (Forster 1964a:131)
**Hapona otagoa* (Forster 1964a:137)
Hapona paihia Forster 1970b:117
Hapona reinga Forster 1970b:118
Hapona salmoni (Forster 1964a:134)
Hapona tararua Forster 1970b:116
Laestrygones Urquhart 1894:216
Laestrygones albiceris* Urquhart 1894:217 **Figs 50.17–20
CH *Laestrygones chathamensis* Forster 1970b:124
AU, CA *Laestrygones minutissimus* (Hogg 1909:157)
Laestrygones otagoensis Forster 1970b:127
Laestrygones westlandicus Forster 1970b:126
Toxopsoides Forster & Wilton 1973:309
**Toxopsoides huttoni* Forster & Wilton 1973:309

Undetermined / undescribed taxa
Lamina sp. **Fig. 50.16**

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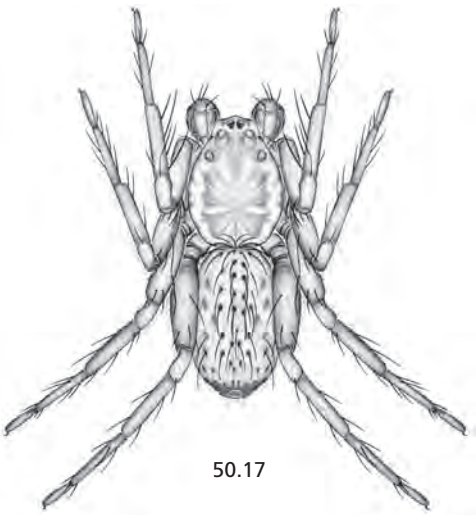
after Forster 1970b



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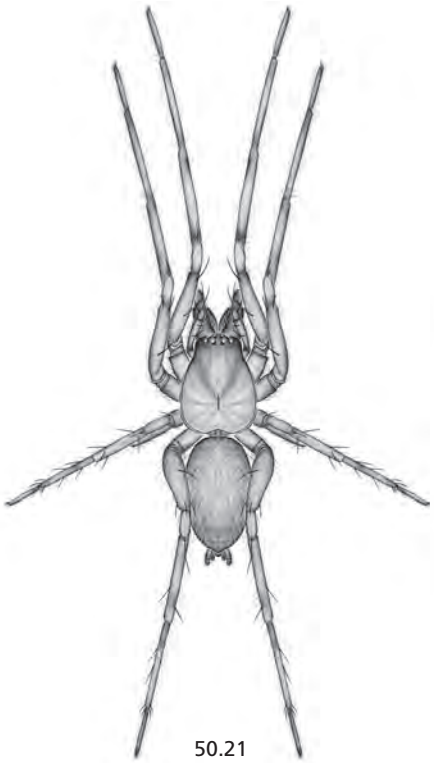
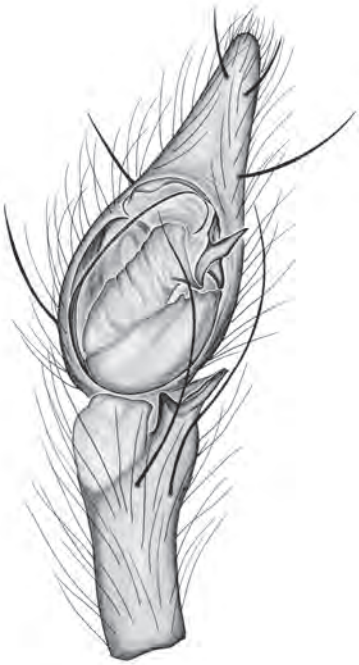


50.21



50.22

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Amphinectidae

Diversity

18 genera, 113 species.

Summary description

Small to large araneomorphs (2.5–16.0 mm), entelegyne, cribellate and ecribellate, 3 claws, 8 eyes.

Diagnosis

Male palp with a weakly sclerotised median apophysis, represented by the apically hooked form and its derivatives, or median apophysis missing. Embolus spiniform sometimes twisted across the bulb, coiled or bent. Epigynum often retaining the posteriorly paired spines (after Forster & Wilton 1973).

Similar families

Differentiating Amphinectidae from Agelenidae, Desidae, and Amaurobiidae is difficult/impossible. The configuration of the tracheal system was important in the definition of the limits of these families; trachea may be phylogenetically important, but they do not correspond to external somatic and genitalic characters that are commonly used for identification. With the exception of *Aorangia* and *Neolana*, Amphinectidae differ from Agelenidae by the presence of trichobothria on both the female palp and the male palpal cymbium. Some genera are best recognised by their unique feature: spinnerets with distinctive spigots (*Aorangia*, Fig. 51.2), male palp with prominent tibial apophysis (*Paramamoea*, Fig. 51.3).

Taxonomic notes

The New Zealand Amphinectidae have been revised (Forster & Wilton 1973), but given the limited distribution of most species, the discovery of additional species is likely. There is at least one undescribed species (A.D. Blest, pers. comm.). *Aorangia* is *incertae sedis* in the family (Forster & Wilton 1973). Many species are known only from females.

Key references

Forster & Wilton 1973, Forster & Forster 1999.

Endemicity, habitat and distribution

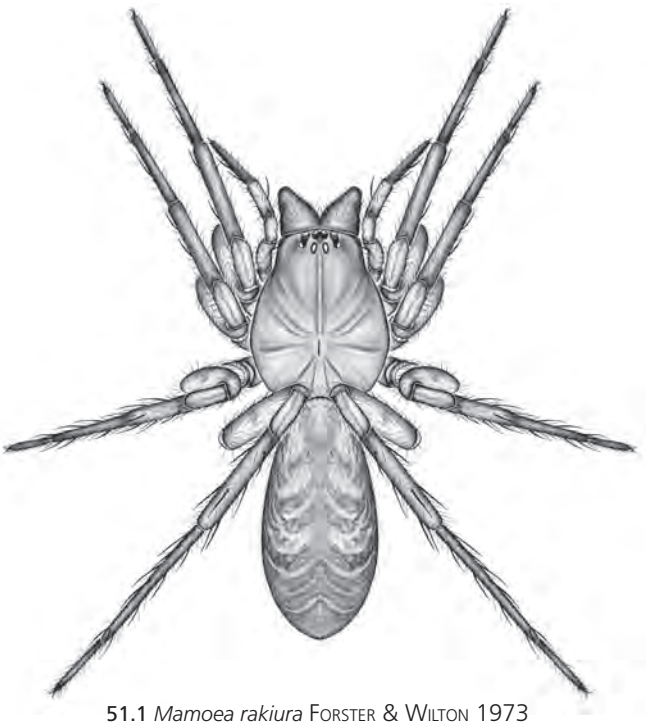
Amphinectidae are only found in New Zealand, Australia (Davies 1998a) and South America, particularly Chile (Exline 1960). All New Zealand species and genera are endemic. Most species are associated with native forest where they are nocturnal hunters on the forest floor and under loose bark. Many species are found under and in dead logs and some species are also known to construct small sheetwebs or shapeless webs. *Akatorea* is also known from cliff faces near the sea, *Marplesia* from overhanging rocks in shady habitats. Amphinectidae are found on both main islands, but the diversity is greatest in the South Island. *Paramamoea* are restricted to the North Island. *Mamoea* spp. are the most common species found on the forest floor.

Classification and nomenclature notes

Neolana was considered in its own family, the Neolanidae, before being placed within Amphinectidae.

Species list

AMPHINECTIDAE Forster & Wilton 1973:157
- *Akatorea* Forster & Wilton 1973:175
  - **Akatorea gracilis* (Marples 1959:352)
  - *Akatorea otagoensis* Forster & Wilton 1973:178
- *Amphinecta* Simon 1898a:235
  - **Amphinecta decemmaculata* Simon 1898a:235
  - *Amphinecta dejecta* Forster & Wilton 1973:164
  - *Amphinecta luta* Forster & Wilton 1973:163
  - *Amphinecta mara* Forster & Wilton 1973:161
  - *Amphinecta milina* Forster & Wilton 1973:161 **Figs 51.9–11**
  - *Amphinecta mula* Forster & Wilton 1973:161
  - *Amphinecta pika* Forster & Wilton 1973:162
  - *Amphinecta pila* Forster & Wilton 1973:163
  - *Amphinecta puka* Forster & Wilton 1973:161
  - *Amphinecta tama* Forster & Wilton 1973:164
  - *Amphinecta tula* Forster & Wilton 1973:164
- *Aorangia* Forster & Wilton 1973:278 **Fig. 51.2**
  - *Aorangia agama* Forster & Wilton 1973:282 **Fig. 51.5**
  - **Aorangia ansa* Forster & Wilton 1973:279
  - *Aorangia fiordensis* Forster & Wilton 1973:286
  - *Aorangia isolata* Forster & Wilton 1973:285
  - *Aorangia kapitiensis* Forster & Wilton 1973:289
  - *Aorangia mauii* Forster & Wilton 1973:284
  - *Aorangia muscicola* Forster & Wilton 1973:281
  - *Aorangia obscura* Forster & Wilton 1973:286
  - *Aorangia otira* Forster & Wilton 1973:288
  - *Aorangia pilgrimi* Forster & Wilton 1973:280
  - *Aorangia poppelwelli* Forster & Wilton 1973:281
  - *Aorangia pudica* Forster & Wilton 1973:287
  - *Aorangia semita* Forster & Wilton 1973:285
  - *Aorangia silvestris* Forster & Wilton 1973:285
  - *Aorangia singularis* Forster & Wilton 1973:287
  - *Aorangia tumida* Forster & Wilton 1973:284
- *Dunstanoides* Forster & Wilton 1989:409
  - *Dunstanoides angustiae* (Marples 1959:342)
  - **Dunstanoides hes*peris (Forster & Wilton 1973:183)
  - *Dunstanoides hinawa* (Forster & Wilton 1973:188)
  - *Dunstanoides hova* (Forster & Wilton 1973:187)
  - *Dunstanoides kochi* (Forster & Wilton 1973:189)
  - *Dunstanoides mira* (Forster & Wilton 1973:188)
  - *Dunstanoides montana* (Forster & Wilton 1973:185)



51.1 *Mamoea rakiura* Forster & Wilton 1973

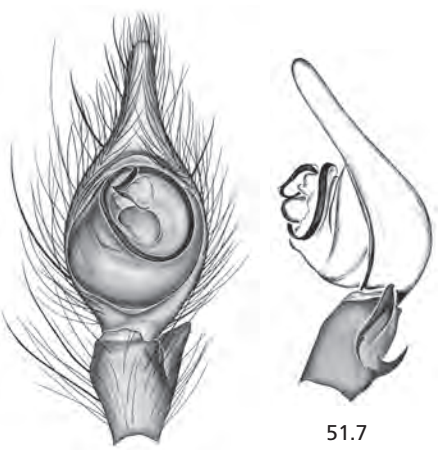
51.2

51.3

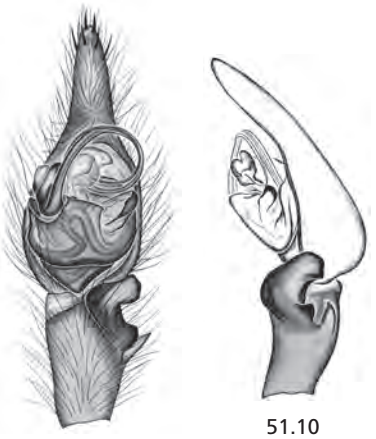
Dunstanoides nuntia (Marples 1959:343)
Dunstanoides salmoni (Forster & Wilton 1973:185)
Holomamoea Forster & Wilton 1973:238
**Holomamoea foveata* Forster & Wilton 1973:239
Huara Forster 1964b:80
AU **Huara antarctica* (Berland 1931c:359)
Huara chapmanae Forster & Wilton 1973:232
Huara decorata Forster & Wilton 1973:231
Huara dolosa Forster & Wilton 1973:233
AU *Huara grossa* Forster 1964b:81
Huara hastata Forster & Wilton 1973:228
Huara inflata Forster & Wilton 1973:231
Huara kikkawa Forster & Wilton 1973:230
Huara marplesi Forster & Wilton 1973:233
Huara mura Forster & Wilton 1973:229
SN *Huara ovalis* (Hogg 1909:174)
Huara pudica Forster & Wilton 1973:228
Makora Forster & Wilton 1973:189
Makora calypso (Marples 1959:346)
Makora detrita Forster & Wilton 1973:191
Makora diversa Forster & Wilton 1973:192
**Makora figurata* Forster & Wilton 1973:190
Makora mimica Forster & Wilton 1973:192
Mamoea Forster & Wilton 1973:202
Mamoea assimilis Forster & Wilton 1973:214
Mamoea bicolor (Bryant 1935d:77)
Mamoea cantuaria Forster & Wilton 1973:215
Mamoea cooki Forster & Wilton 1973:218
Mamoea florae Forster & Wilton 1973:208
Mamoea grandiosa Forster & Wilton 1973:210
Mamoea hesperis Forster & Wilton 1973:215
Mamoea hughsoni Forster & Wilton 1973:214
Mamoea inornata Forster & Wilson 1973:213
Mamoea mandibularis (Bryant 1935d:78)
Mamoea maorica Forster & Wilton 1973:207
Mamoea montana Forster & Wilton 1973:210
Mamoea monticola Forster & Wilton 1973:215
Mamoea otira Forster & Wilton 1973:206
Mamoea pilosa (Bryant 1935d:75)
Mamoea rakiura Forster & Wilton 1973:209 **Figs 51.1, 4**
CA **Mamoea rufa* (Berland 1931c:361)
Mamoea unica Forster & Wilton 1973:205
Mamoea westlandica Forster & Wilton 1973:207
Maniho Marples 1959:349
Maniho australis Forster & Wilton 1973:172
Maniho cantuarius Forster & Wilton 1973:170
Maniho centralis Forster & Wilton 1973:173
Maniho insulanus Forster & Wilton 1973:169
Maniho meridionalis Forster & Wilton 1973:172
Maniho ngaitahu Forster & Wilton 1973:171
Maniho otagoensis Forster & Wilton 1973:173
Maniho pumilio Forster & Wilton 1973:174
**Maniho tigris* Marples 1959:349
Maniho vulgaris Forster & Wilton 1973:168
Marplesia Lehtinen 1967:246
**Marplesia dugdalei* Forster & Wilton 1973:193
Marplesia pohara Forster & Wilton 1973:195
Neolana Forster & Wilton 1973:272
Neolana dalmasi (Marples 1959:347) **Figs 51.6–8**
Neolana pallida Forster & Wilton 1973:276
Neolana septentrionalis Forster & Wilton 1973:275
Neororea Forster & Wilton 1973:234
Neororea homerica Forster & Wilton 1973:23
AU **Neororea sorenseni* (Forster 1955c:179)
Oparara Forster & Wilton 1973:179
Oparara karamea Forster & Wilton 1973:181
**Oparara vallus* (Marples 1959:344)
Paramamoea Forster & Wilton 1973:218
Paramamoea aquilonalis Forster & Wilton 1973:219
Paramamoea arawa Forster & Wilton 1973:221
**Paramamoea incerta* Forster & Wilton 1973:218
Paramamoea incertoides Forster & Wilton 1973:219
Paramamoea insulana Forster & Wilton 1973:222
Paramamoea pandora Forster & Wilton 1973:221
Paramamoea paradisica Forster & Wilton 1973:222
Paramamoea parva Forster & Wilton 1973:220
Paramamoea urewera Forster & Wilton 1973:218
Paramamoea waipoua Forster & Wilton 1973:221
Rangitata Forster & Wilton 1973:178
**Rangitata peelensis* Forster & Wilton 1973:179
Reinga Forster & Wilton 1973:198
Reinga apica Forster & Wilton 1973:200
Reinga aucklandensis (Marples 1959:353)
Reinga grossa Forster & Wilton 1973:199
**Reinga media* Forster & Wilton 1973:200
Reinga waipoua Forster & Wilton 1973:200
Rorea Forster & Wilton 1973:237
AU **Rorea aucklandensis* Forster & Wilton 1973:237
Rorea otagoensis Forster & Wilton 1973:238
Waterea Forster & Wilton 1973:197
**Waterea cornigera* Forster & Wilton 1973:197

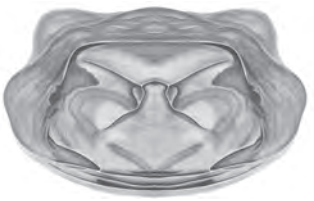
51.4

51.5


51.6 51.7

51.8
after Forster & Wilton 1973


51.9 51.10


51.11

Amaurobiidae

Diversity

8 genera, 35 species.

Summary description

Small to medium-sized araneomorphs (2.5–11.0 mm), ecribellate and cribellate, 3 claws, 8 or 6 eyes.

Diagnosis

The median apophysis of the male palp is a sclerotised plate-like structure that is variable, but not the simple hooked form; tracheal system simple.

Similar families

Differentiating Amaurobiidae from Agelenidae, Desidae, and Amphinectidae is difficult/impossible. The configuration of the tracheal system was important in the definition of the limits of these families; trachea may be phylogenetically important, but they do not correspond to external somatic and genitalic characters that are commonly used for identification. Most Amaurobiidae are ecribellate (except *Waitetola huttoni* and *Poaka graminicola*). *Otira* have highly distinctive features: tarsal prong replacing the tarsal organ (Fig. 52.2).

Taxonomic & additional notes

Poaka graminicola was previously included in Psechridae. *Maloides cavernicola* is a troglobite. A second troglobitic species has been collected but is still undescribed.

Key references

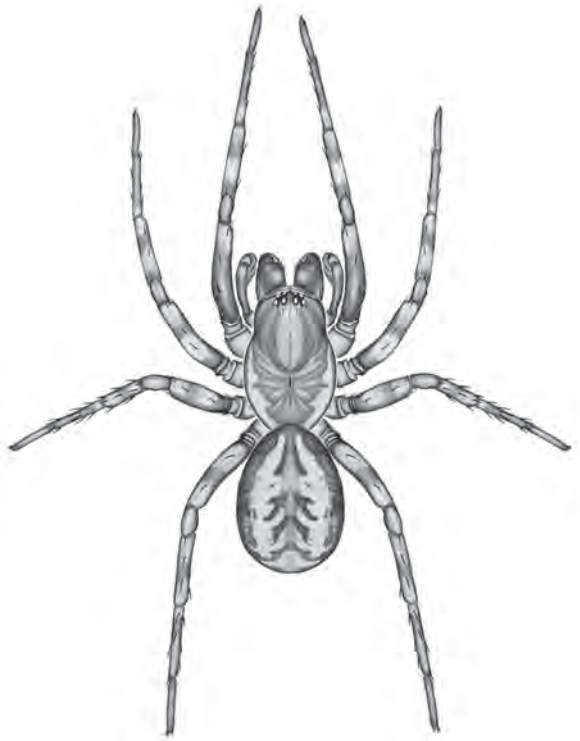
Forster & Wilton 1973, Forster & Forster 1999.

Endemicity, habitat and distribution

All taxa are endemic, except *Otira*, which is also reported from Australia (Davies 1986). New Zealand species have fairly restricted distributions in the South Island, but *Muritaia, Pakeha* and *Otira* are known from the North Island. Almost all species are associated with native forest in leaf litter, but some are found in tussock and alpine habitats. *Poaka graminicola* is widespread and lives in grass and low shrubs. *Maloides cavernicola*, a troglobite, is known from one cave in the South Island.

Species list

AMAURORIIDAE Thorell 1870b:119
- *Auhunga* Forster & Wilton 1973:264
  - **Auhunga pectinata* Forster & Wilton 1973:264
- *Maloides* Forster & Wilton *in* Platnick 1989b:424
  - **Maloides cavernicola* (Forster & Wilton 1973:270)
- *Muritaia* Forster & Wilton 1973:266
  - *Muritaia kaituna* Forster & Wilton 1973:266
  - *Muritaia longispinata* Forster & Wilton 1973:267
  - *Muritaia orientalis* Forster & Wilton 1973:267
  - *Muritaia parabusa* Forster & Wilton 1973:266
  - **Muritaia suba* Forster & Wilton 1973:266
- *Otira* Forster & Wilton 1973:259
  - *Otira canasta* Forster & Wilton 1973:263
  - *Otira indura* Forster & Wilton 1973:263
  - *Otira liana* Forster & Wilton 1973:263
  - *Otira parva* Forster & Wilton 1973:261
  - **Otira satura* Forster & Wilton 1973:260
  - *Otira terricola* Forster & Wilton 1973:262
- *Pakeha* Forster & Wilton 1973:245
  - *Pakeha buechlerae* Forster & Wilton 1973:259
  - *Pakeha duplex* Forster & Wilton 1973:251
  - *Pakeha hiloa* Forster & Wilton 1973:258
  - *Pakeha inornata* Forster & Wilton 1973:252
  - *Pakeha insignita* Forster & Wilton 1973:249
  - SN *Pakeha kirki* (Hogg 1909:173)
  - *Pakeha lobata* Forster & Wilton 1973:257
  - *Pakeha manapouri* Forster & Wilton 1973:259
  - *Pakeha maxima* Forster & Wilton 1973:248
  - *Pakeha media* Forster & Wilton 1973:247
  - *Pakeha minima* Forster & Wilton 1973:246
  - *Pakeha paratecta* Forster & Wilton 1973:254
  - *Pakeha parrotti* Forster & Wilton 1973:255
  - **Pakeha protecta* Forster & Wilton 1973:245
  - *Pakeha pula* Forster & Wilton 1973:256
  - *Pakeha stewartia* Forster & Wilton 1973:253
  - *Pakeha subtecta* Forster & Wilton 1973:249
  - *Pakeha tecta* Forster & Wilton 1973:250
- *Paravoca* Forster & Wilton 1973:268
  - *Paravoca opaca* Forster & Wilton 1973:269
  - **Paravoca otagoensis* Forster & Wilton 1973:269 **Figs 52.1, 3–5**
- *Poaka* Forster & Wilton 1973:297
  - **Poaka graminicola* Forster & Wilton 1973:297 **Figs 52.6–8**
- *Waitetola* Forster & Wilton 1973:244
  - **Waitetola huttoni* Forster & Wilton 1973:244



52.1 *Paravoca otagoensis* Forster & Wilton 1973

52.2

52.3

52.4

52.5

52.6

52.7

52.8

Tengellidae

Diversity

1 genus, 1 species.

Summary description

Small araneomorphs (3–3.3 mm), entelegyne, cribellate, 3 claws, 8 eyes.

Diagnosis

Ventral surface of tibia and metatarsi of legs I and II with numerous long spines in 2 rows (Fig. 53.1).

Similar families

Wiltona filicicola lacks obvious morphological features that allow a confident familial assignment, therefore it could be confused with several taxa. It is best recognised by its genitalic characters (Figs 53.2–53.5).

Taxonomic notes

This monotypic genus was tentatively placed in Tengellidae by Raven & Stumkat (2003).

Key references

Forster & Wilton 1973, Raven & Stumkat 2003.

Endemicity, habitat and distribution

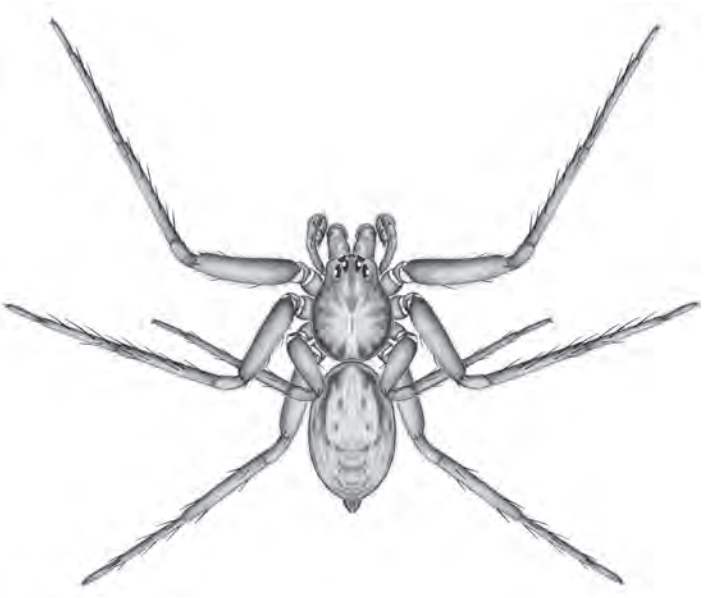
Monotypic endemic genus. *Wiltona filicicola* hunts on low foliage. The species is rarely collected and known only from Lake Hauroko (Southland, South Island).

Classification and nomenclature notes

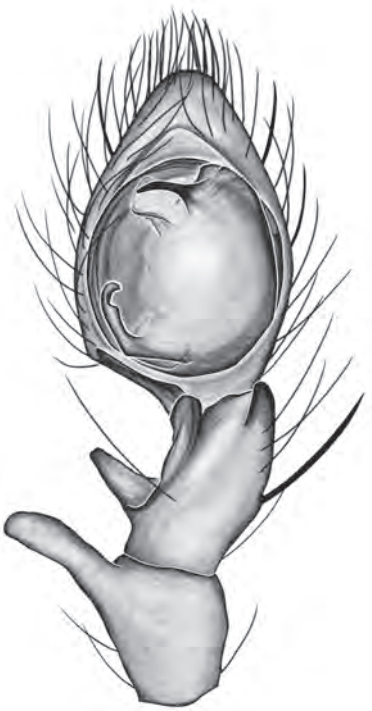
Previously included in Psechridae. The species was known as *Haurokoa filicicola*. However, *Wiltona* is a replacement name for *Haurokoa,* which was pre-occupied in Mollusca.

Species list

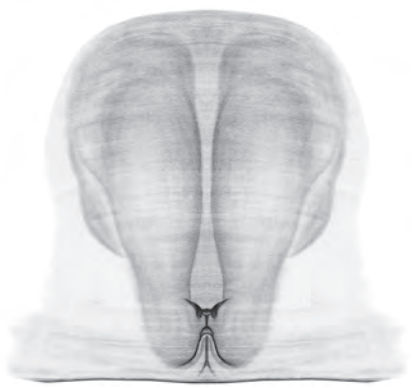
TENGELLIDAE Dahl 1908:194
Wiltona Koçak & Kemal 2008:2
Wiltona filicicola* (Forster & Wilton 1973:299) **Figs 53.1–5



53.1 *Wiltona filicicola* (Forster & Wilton 1973)



53.2



53.5

53.3

53.4

Miturgidae

Diversity

3 genera, 3 species.

Summary description

Medium-sized araneomorphs (7.6–8.6 mm), entelegyne, ecribellate, 2 claws, 8 eyes.

Diagnosis

The family contains three genera, two of which – *Pacificana* and *Zealoctenus* – are included in Miturgidae for lack of better options. *Cheiracanthium* have a carapace without fovea (Fig. 54.1) and cymbium of male palp with a basal projection (Fig. 54.4). *Pacificana cockayni* have a distinctive habitus (Fig. 54.8) and *Zealoctenus cardronaensis*, known only from a single female specimen, has a distinct epigynum.

Similar families

Clubionidae have a fovea in the carapace (absent in *Cheiracanthium*). **Anyphaenidae** have eyes in two rows (three rows in *Pacificana*). *Pacificana* and *Zealoctenus* are best recognised by the genitalia (Figs 54.5–54.7).

Taxonomic notes

As it stands, *Zealoctenus cardronaensis* and *Pacificana cockayni* are placed in this family because of the lack of better options (see Brignoli 1983c, Raven & Stumkat 2003). The males of both species are still unknown, which makes taxonomic assessment difficult, but Raven & Stumkat (2003) stated that *Zealoctenus* is similar to *Diaprogrypta* Simon 1909d from Australia – actually placed in Miturgidae – therefore justifying its transfer. Five undescribed *Zealoctenus* are suspected in New Zealand (R.J. Raven, pers. comm.).

Key references

Forster 1955c, 1979, Forster & Wilton 1973, Raven & Stumkat 2003.

Endemicity, habitat and distribution

Cheiracanthium is a genus with a worldwide distribution, but *Cheiracanthium stratioticum* is found only in Australia and New Zealand. It is known from the North Island and the northern half of the South Island (Forster & Forster 1999). It usually lives in open habitats where it builds a silken retreat in vegetation. *Zealoctenus* is an endemic genus and *Z. cardronaensis* has been collected from grassland and scrub at high elevation in tussock (Forster & Wilton 1973, Forster & Forster 1999). *Pacificana* is a monotypic genus endemic to the Bounty Islands. *Pacificana cockayni* have been collected under loose rocks in bird colonies (Forster 1955c).

Classification and nomenclature notes

Cheiracanthium was previously placed in Clubionidae and spelled *Chiracanthium*; *Zealoctenus* was previously placed in Ctenidae; *Pacificana* was previously placed in Amaurobioididae (=Anyphaenidae).

Species list

MITURGIDAE Simon 1886g:373

Eutichurinae Lehtinen 1967:321

Cheiracanthium C.L. Koch 1839b:9

[NI] *Cheiracanthium stratioticum* L. Koch 1873a:408 **Figs 54.1–4**

Miturginae Simon 1886g:373

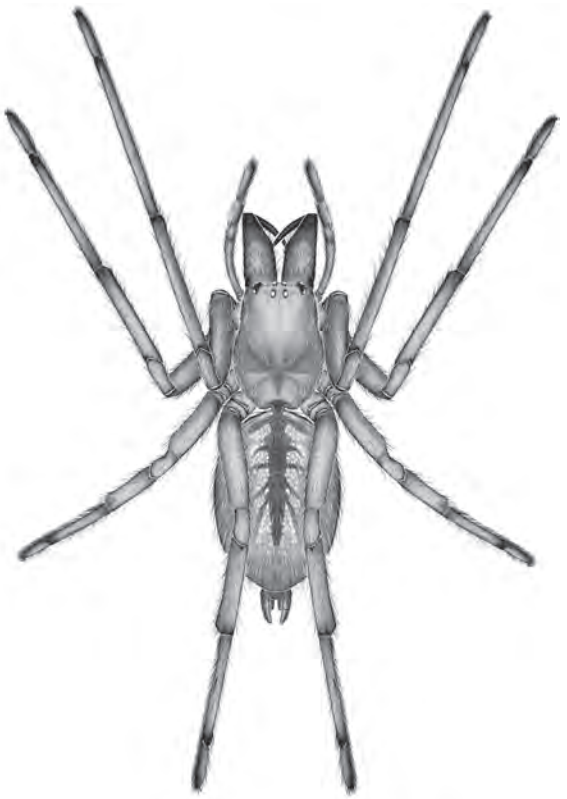
Zealoctenus Forster & Wilton 1973:295

Zealoctenus cardronaensis* Forster & Wilton 1973:295 **Fig. 54.5

Incertae sedis

Pacificana Hogg 1904:65

BO **Pacificana cockayni* Hogg 1904:66 **Figs 54.6–8**



54.1 *Cheiracanthium stratioticum* L. Koch 1873

54.2

54.3
after Forster 1979

54.4
after Forster 1979

54.5
after Forster 1979

54.6

54.7

54.8

Cycloctenidae

Diversity

4 genera, 28 species.

Summary description

Small to large araneomorphs (4.1–13.5 mm), entelegyne, ecribellate, 3 claws, 8 eyes.

Diagnosis

Eyes in two strongly recurved rows with posterior eyes much larger than anterior eyes (Figs 55.1, 55.13); distinctive carapace modifications for *Plectophanes* (Figs 55.2, 55.9); absence of claw tufts and scopulae.

Similar families

Lycosidae have similar habitus and colouration, but differ by the eye pattern in which PME and PLE forms a quadrangle and AME and ALE are straight or recurved (PME and PLE forming a strongly recurved row, and AME and ALE in a procurved row in Cycloctenidae); palp without tibial process (present in Cycloctenidae).

Taxonomic notes

New Zealand Cycloctenidae have been revised, but the discovery of additional species is likely. There is at least one *Toxopsiella* and one *Plectophanes* undescribed (P.J. Sirvid, pers. comm.). The males of *Cycloctenus agilis, Plectophanes altus, Plectophanes archeyi, Plectophanes pilgrimi,* and *Toxopsiella alpina* are unknown. *Uzakia unica* was regarded as *incertae sedis* by Forster (1979), but was included in the Cycloctenidae as he believed that it is related to *Plectophanes.*

Key references

Forster 1970b, Forster 1979.

Endemicity, habitat and distribution

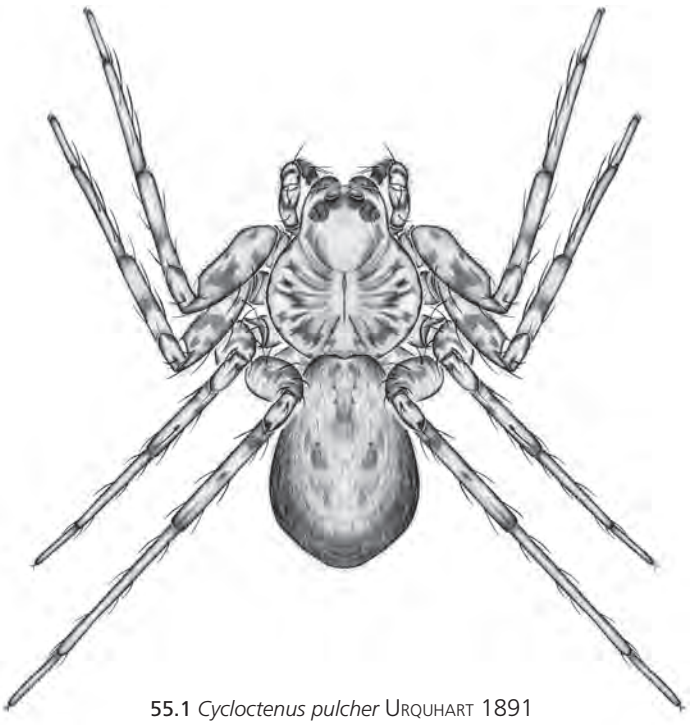
Cycloctenidae are known only from Australia and New Zealand. *Plectophanes* and *Toxopsiella* are endemic genera, although Forster (1979) reported that *Toxopsiella* or a closely related genus occurs in Australia. *Cycloctenus* is also found in Australia. All New Zealand species are endemic. Cycloctenidae are hunters and do not construct snares, *Cycloctenus* and *Toxopsiella* rely on direct hunting while *Plectophanes* hides in tunnels in twigs. *Cycloctenus* and *Toxopsiella* are found on the forest floor, alpine and tussock habitats, and *Toxopsiella alpina* is known from under stones in scree slopes. *Uzakia unica* was collected on low ferns in beech forest. Most *Toxopsiella* are restricted to the South Island, but *T. centralis, T. medialis* and *T. perplexa* are known only from the North Island. Likewise, most *Cycloctenus* are restricted to the South Island, but *C. centralis, C. lepidus* and *C. pulcher* are known only from the North Island. Very few data are available on the distribution of *Plectophanes*, but these species appear to have narrow distributions in the South Island, except *P. frontalis* known from Wellington to Taranaki in the North Island. *Uzakia unica* is a rarely collected species known from two localities in Fiordland (South Island).

Classification and nomenclature notes

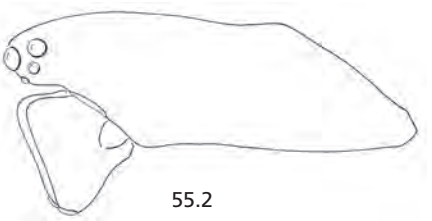
Anaua unica was placed in Desidae. *Uzakia* is a replacement name for *Anaua*, pre-occupied in Orthoptera.

Additional notes

Cycloctenus paturau is known only from several caves around Nelson (South Island). It has elongated legs and depigmentation, but no reduction of eyes. Forster (1979) suggested that the species is derived from *C. nelsonensis*, but the relationship between the populations found in these caves is "not directly conspecific". The troglobitic/troglophilic affinities remain unresolved.



55.1 *Cycloctenus pulcher* Urquhart 1891

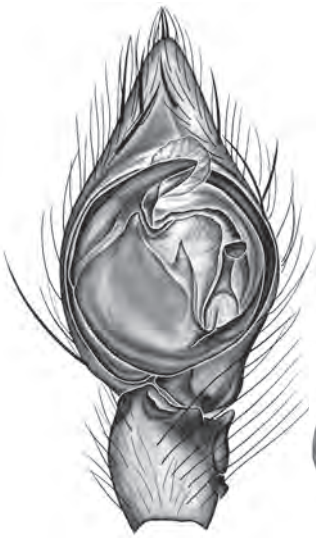


55.2

Species list

CYCLOCTENIDAE Simon 1898a:320
- *Cycloctenus* L. Koch 1878a:988
  - *Cycloctenus agilis* Forster 1979:20
  - *Cycloctenus centralis* Forster 1979:21
  - *Cycloctenus duplex* Forster 1979:22
  - *Cycloctenus fiordensis* Forster 1979:18
  - *Cycloctenus fugax* Goyen 1890:267
  - *Cycloctenus lepidus* Urquhart 1890c:261
  - *Cycloctenus nelsonensis* Forster 1979:16
  - *Cycloctenus paturau* Forster 1979:17
  - *Cycloctenus pulcher* Urquhart 1891a:183 **Figs 55.1, 3–5**
  - *Cycloctenus westlandicus* Forster 1964a:149
- *Plectophanes* Bryant 1935d:81 **Fig. 55.2**
  - *Plectophanes altus* Forster 1964a:143
  - *Plectophanes archeyi* Forster 1964a:144
  - **Plectophanes frontalis* Bryant 1935d:82 **Figs 55.9–12**
  - *Plectophanes hollowayae* Forster 1964a:145
  - *Plectophanes pilgrimi* Forster 1964a:142
- *Toxopsiella* Forster 1964a:114
  - *Toxopsiella alpina* Forster 1964a:122
  - *Toxopsiella australis* Forster 1964a:126
  - *Toxopsiella centralis* Forster 1964a:119
  - *Toxopsiella dugdalei* Forster 1964a:123
  - SN *Toxopsiella horningi* Forster 1979:26
  - **Toxopsiella lawrencei* Forster 1964a:115 **Figs 55.14–15**
  - *Toxopsiella medialis* Forster 1964a:116
  - *Toxopsiella minuta* Forster 1964a:129
  - *Toxopsiella nelsonensis* Forster 1979:28
  - *Toxopsiella orientalis* Forster 1964a:120
  - *Toxopsiella parrotti* Forster 1964a:126
  - *Toxopsiella perplexa* Forster 1964a:130
- *Uzakia* Koçak & Kemal 2008:2
  - **Uzakia unica* (Forster 1970b:63) **Figs 55.6–8**

Undetermined / undescribed taxa
- *Toxopsiella* sp. **Figs 50.13, 16**



55.3

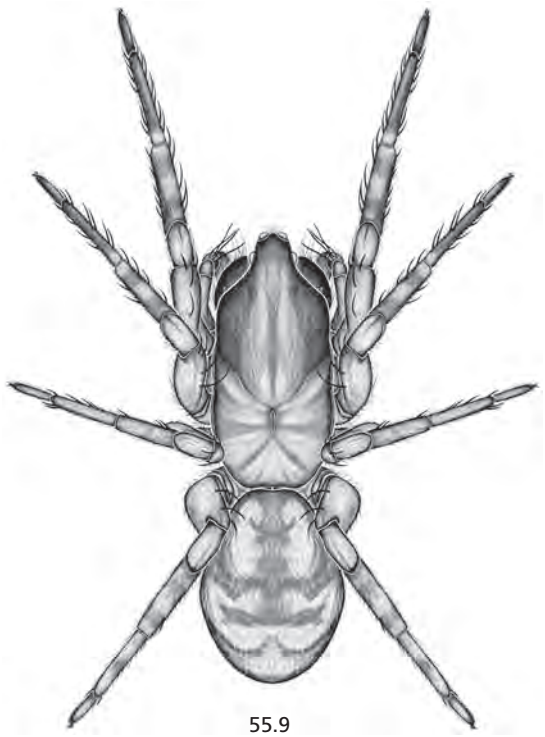
55.4

55.5

55.6
after Forster & Wilton 1973

55.7
after Forster & Wilton 1973

55.8
after Forster & Wilton 1973



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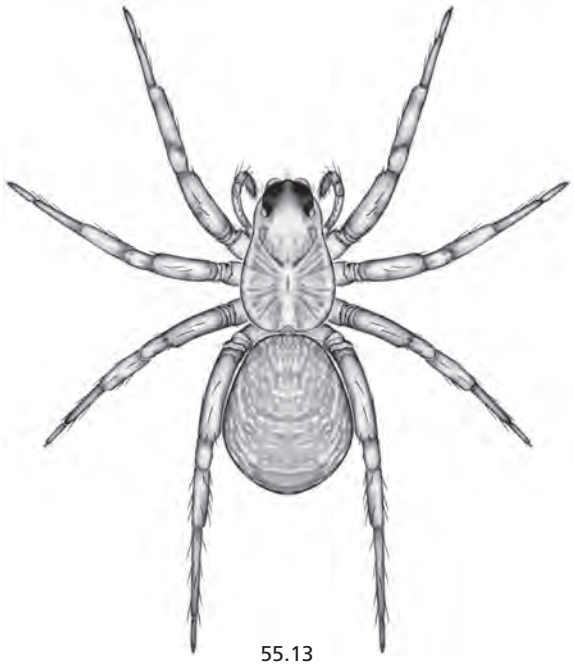


55.13

55.14

55.15

55.16

Zoropsidae

Diversity

1 genus, 3 species.

Summary description

Large araneomorphs (10.7–22 mm), entelegyne, ecribellate, 2 claws, 8 eyes.

Diagnosis

Large colulus; when alive, interior of male palps brightly coloured (usually orange); cymbium with a dense dorsal scopula (Fig. 56.3); dense leg scopula.

Similar families

Lycosidae have an eye arrangement in 3 rows (2 rows in Zoropsidae). **Pisauridae** have strongly recurved PER (almost straight in Zoropsidae).

Taxonomic notes

New Zealand Zoropsidae are badly in need of taxonomic attention. They have been recently transferred from Miturgidae to Zoropsidae by Raven & Stumkat (2003). The three known species are not recognisable based on published descriptions. Another 40 undescribed species are suspected (R.J. Raven, pers. comm.) and may represent several distinct genera. The males of *Uliodon albopunctatus* and *Uliodon cervinus* are undescribed.

Key references

Forster & Forster 1999, Raven & Stumkat 2003.

Endemicity, habitat and distribution

The genus *Uliodon* is endemic to New Zealand. These spiders are found in a variety of habitats: native forest and plantations, open habitat amongst logs and rocks, but also scree slopes and occasionally in houses. They are vagrant hunters and forest species are known to retreat into shelters under logs and debris. After mating, the female prepares a chamber lined with silk beneath a log or stone on the forest floor, or inside a rotten log, where they construct a rather large and round eggsac that they guard until the young hatch and disperse (Forster & Forster 1999). The genus is apparently widespread throughout the country.

Additional notes

When mishandled, these spiders tend to inflict a painful bite given their large size. The bites are usually without further consequences, but Watt (1971) reported a case of a bad reaction (pain, swollen skin and stiff joints).

Classification and nomenclature notes

Previously placed in *Miturga,* Miturgidae. All New Zealand species are now placed in *Uliodon*.

Species list

ZOROPSIDAE Bertkau 1882:337

Uliodoninae Lehtinen 1967:316

Uliodon L. Koch 1873a:431

**Uliodon albopunctatus* L. Koch 1873a:432

Uliodon cervinus L. Koch 1873a:433

Uliodon frenatus (L. Koch 1873a:440)

Undetermined / undescribed taxa

Uliodon sp. a **Figs 56.1, 4**

Uliodon sp. b **Figs 56.2–3**

56.1 *Uliodon* sp.

56.2

56.3

56.4

Oxyopidae

Diversity

1 genus, 1 species.

Summary description

Small to medium-sized araneomorphs (4–9 mm), entelegyne, ecribellate, 3 claws, 8 eyes.

Diagnosis

Hexagonal eye arrangement (Fig. 57.5); abdomen tapered (Fig. 57.1); legs with prominent spines (Fig. 57.1).

Similar families

Could be mistaken for **Salticidae** in the field, but easily separated by the eye arrangement.

Taxonomic notes

The only species found in New Zealand is *Oxyopes gracilipes*, which is variable in colouration (Vink & Sirvid 1998). Females can often be found with the epigynal area covered by a "plug", which is presumed to be a consequence of mating. The "plug" may distort the appearance of the epigynum quite markedly but it can be removed to allow a clear view of the external genitalia. The discovery of additional species is possible in New Zealand, but seems unlikely.

Key references

Vink & Sirvid 1998, 2000.

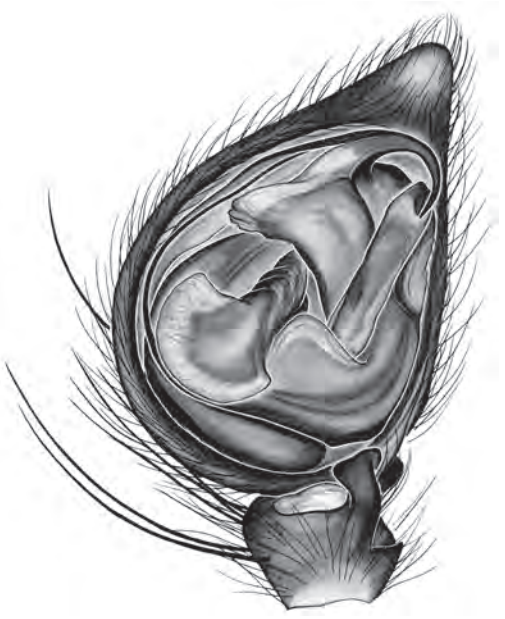
Endemicity, habitat and distribution

It is likely that *O. gracilipes* was naturally introduced from Australia, where it is widespread and occurs along with four other related species (Vink & Sirvid 2000). *Oxyopes gracilipes* is usually found on low shrubs, tall grass and tussock throughout New Zealand north of 46° S and on many of the closer offshore islands (Vink & Sirvid 1998).

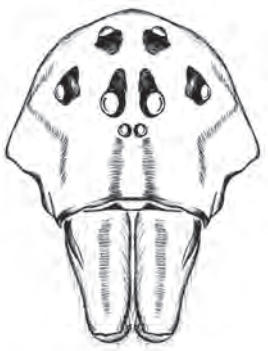
Species list

OXYOPIDAE Thorell 1870b:188
Oxyopes Latreille 1804b:135
[NI] *Oxyopes gracilipes* (White 1849:5) **Figs 57.1–5**

57.1 *Oxyopes gracilipes* (White 1849)

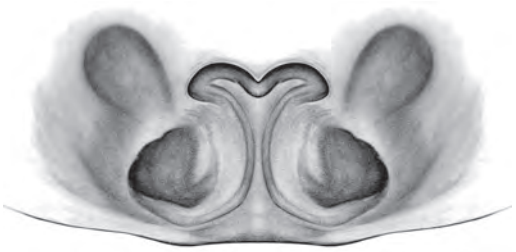


57.2



57.5

57.3



57.4

Pisauridae

Diversity

1 genus, 4 species

Summary description

Large to very large araneomorphs (8–28 mm), entelegyne, ecribellate, 3 claws, 8 eyes.

Diagnosis

Eyes in 2 rows (Fig. 58.1); the anterior row consists of four small eyes, the posterior eyes are larger and the posterior eye row is strongly curved; females carry the egg sac in their chelicerae and build a nursery-web.

Similar families

Lycosidae have the posterior eye row strongly recurved, forming a quadrangle (recurved row in Pisauridae); males without retrolateral tibial apophysis (present in Pisauridae). In the field, Pisauridae can be mistaken for Cycloctenidae, Zoropsidae (*Uliodon*) and Gradungulidae (*Gradungula sorenseni*), but are easily separated by the eye arrangement.

Taxonomic notes

Vink & Dupérré (in press) have revised the New Zealand fauna. Only three of the ten nominal species are recognised in New Zealand; *Dolomedes facetus* L. Koch 1876a:869, *Dolomedes huttoni* Hogg 1908:340, *Dolomedes lateralis* White 1849:4, *Dolomedes mirificus* Walckenaer 1837:355, *Dolomedes sagittiger* White 1849:4, *Dolomedes tridentatus* Hogg 1911:311, *Dolomedes trippi* Hogg 1908:342 are either synonyms, *nomina dubia*, or not present in New Zealand.

Key reference

Vink & Dupérré (in press).

Endemicity, habitat and distribution

Although *Dolomedes* has a worldwide distribution (Platnick 2010), all New Zealand species are endemic. *Dolomedes minor* is found throughout New Zealand in grassland, open scrub and swamps. *Dolomedes aquaticus* is found in open riverbeds and lake shores, and an undescribed species is found in shaded riverbeds; both species are found throughout New Zealand. *Dolomedes schauinslandi* is endemic to the Chatham Islands, where it is now restricted to South East Island, Mangere Island and Houruakopara Island (Vink & Dupérré, in press). Female *Dolomedes* typically carry their eggsac with their chelicerae and palps.

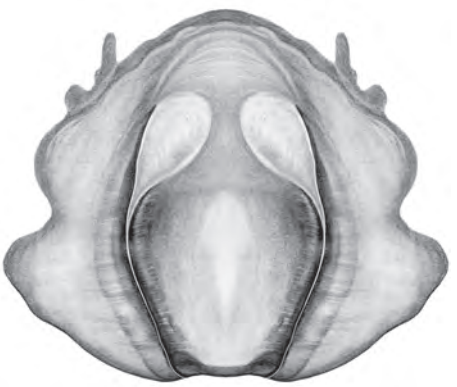
Species list

PISAURIDAE Simon 1890a:92
Dolomedes Latreille 1804b:135
Dolomedes aquaticus Goyen 1888a:133 **Figs 58.1–4**
Dolomedes minor L. Koch 1876a:867
CH *Dolomedes schauinslandi* Simon 1899b:436
Dolomedes n.sp. Vink & Dupérré, in press

58.1 *Dolomedes aquaticus* Goyen 1888

58.2

58.3



58.4

Lycosidae

Diversity

6 genera, 27 species.

Summary description

Small to large araneomorphs (4–16 mm), entelegyne, ecribellate, 3 claws, 8 eyes.

Diagnosis

Eyes in 3 rows (Fig. 59.1); the eyes of the middle and posterior rows are much larger and are formed by the PME and PLE respectively; male pedipalp without retrolateral tibial apophysis; females carry the eggsac attached to the spinneret; after hatching, the spiderlings are carried on the abdomen.

Similar families

Pisauridae have the posterior eye row moderately curved (highly recurved, forming a quadrangle in Lycosidae); males have a retrolateral tibial apophysis (absent in Lycosidae). Lycosidae can be mistaken for Cyclocteni-dae, Zoropsidae (*Uliodon*) and Gradungulidae (*Gradungula sorenseni*) in the field but are easily separated by the eye arrangement.

Taxonomic notes

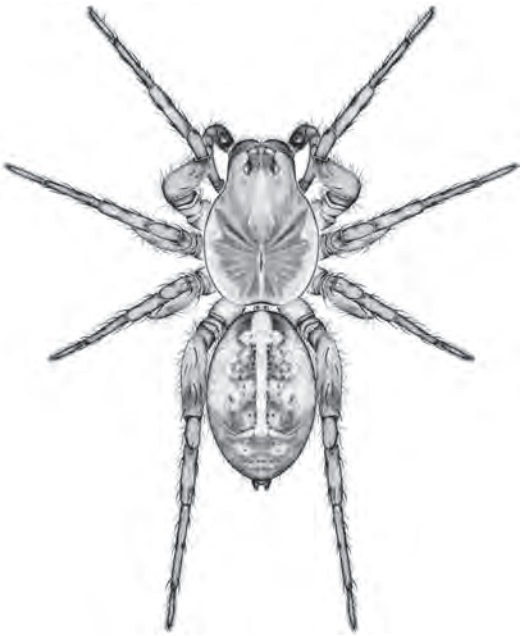
The family has been recently revised (Vink 2002), and it is unlikely that there are still undescribed species.

Key references

Vink 2001, 2002, Framenau & Vink 2001; Framenau 2002; Vink *et al*. 2002; Vink & Paterson 2003.

Endemicity, habitat and distribution

Anoteropsis and *Notocosa* are endemic genera. The genera *Allotrochosina* (1 endemic species) and *Artoria* (3 endemic species) are also found in Australia (Framenau 2002, Vink 2002). *Artoria* as currently defined may not be monophyletic, at least with respect to the New Zealand species (Murphy *et al*. 2006). Most New Zealand lycosids are found in open habitats (e.g., grasslands, riverbeds, swamps and beaches) throughout New Zealand, including offshore islands; however, six species, *Allotrochosina schauinslandi, Anoteropsis hallae, Anoteropsis westlandica* and the three *Artoria* are found in forests. *Hogna crispipes* – a senior synonym of *Geolycosa tongatabuensis* (Strand 1911b) – is found in the north of the North Island, throughout Australia and on several South Pacific and Indian Ocean islands. *Venatrix konei* – a senior synonym of *Venatrix goyderi* (Hickman 1944a) – is also found only in the north of the North Island as well as throughout Australia and New Caledonia. The most common species is *Anoteropsis hilaris*.



59.1 *Notocosa bellicosa* (Goyen 1888)

59.2

59.3

59.4

59.5

Species list

LYCOSIDAE Sundevall 1833b:23

Artoriinae Framenau 2007a:4

Anoteropsis L. Koch 1878a:971

Anoteropsis adumbrata (Urquhart 1887:114)

Anoteropsis aerescens (Goyen 1887:206)

Anoteropsis alpina Vink 2002:21

Anoteropsis arenivaga (de Dalmas 1917a:412)

Anoteropsis blesti Vink 2002:23

Anoteropsis canescens (Goyen 1887:203)

Anoteropsis cantuaria Vink 2002:24

**Anoteropsis flavescens* L. Koch 1878a:971

Anoteropsis forsteri Vink 2002:25

Anoteropsis hallae Vink 2002:26

NZ, AU *Anoteropsis hilaris* (L. Koch 1877a:920) **Figs 59.2–4**

CH *Anoteropsis insularis* Vink 2002:28

Anoteropsis lacustris Vink 2002:29

Anoteropsis litoralis Vink 2002:29

Anoteropsis montana Vink 2002:30

Anoteropsis okatainae Vink 2002:30

CH *Anoteropsis ralphi* (Simon 1905d:421)

Anoteropsis senica (L. Koch 1877a:915)

Anoteropsis urquharti (Simon 1898f:28)

Anoteropsis westlandica Vink 2002:33

Artoria Thorell 1877b:531

Artoria hospita Vink 2002:35

Artoria segrega Vink 2002:35

Artoria separata Vink 2002:36

Notocosa Vink 2002:37

Notocosa bellicosa* (Goyen 1888a:138) **Figs 59.1, 5

Lycosinae Bertkau 1878:383

Hogna Simon 1885g:9

[NI] *Hogna crispipes* L. Koch 1877a:923

Venatrix Roewer 1960d:745

[NI] *Venatrix konei* (Berland 1924a:245)

Venoninae Lehtinen & Hippa 1979:3

Allotrochosina Roewer 1960d:927

NZ, CH **Allotrochosina schauinslandi* (Simon 1899b:428)

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GLOSSARY

IMPORTANT NOTE
Efforts have been recently made to standardise the terminology and definitions for taxonomic purposes in arachnology. To avoid discrepancies and confusion, the glossary presented here is largely adapted from Ubick *et al.* (2005), which constitutes a widely used reference on the topic. Used with permission.

Abdomen (= opisthosoma) — the posterior division of the spider body

AER — anterior eye row, see Fig. 1.5

ALE — anterior lateral eyes, see Fig. 1.6

ALS — anterior lateral spinnerets, see Fig. 1.15

Alveolate — containing alveoles, depressions, pits

Alveolus — the concave ventral surface of the male palpal cymbium; the modified palpal tarsus of the male in which lies the genital bulb

AME — anterior median eyes, see Fig. 1.6

Anal tubercle — a small lobe posterior to the spinnerets that bears the anal opening

Anterior — front (toward the front). Anterior view

Anterior eye row (AER) — the anteriormost row of eyes, usually consisting of the anterior median and anterior lateral eyes. See Fig. 1.5

Anterior lateral eyes (ALE) — eyes situated on the anterolateral portion of the eye group. See Fig. 1.6

Anterior lateral spinnerets (ALS) (= anterior spinnerets) — spinnerets that are located closest to the venter. See Fig. 1.15

Anterior median eyes (AME) (= primary eyes) — these are morphologically distinct from the other eyes and are often reduced or lost. See Fig. 1.6

Anterior spinnerets — see anterior lateral spinnerets

Apical (= distal) — toward the terminal portion of an appendage (away from the body)

Apophysis (pl: apophyses) — cuticular or sclerotised projection, common on palpal segments, including femur, patella or tibia of the palp. See also tibial apophysis (TA) and retrolateral tibial apophysis (RTA)

Araneomorphae — infraorder of spiders characterised by diaxial chelicerae and one pair of book lungs

Atrium (pl: atria) — the enlarged opening of the gonopore in haplogyne females; a cavity in the epigynal plate of entelegyne females containing copulatory openings

Basal — toward the body or the base of an appendage

Book lung — a respiratory structure consisting of a rounded gas exchange portion with a posterior spiracle. Most Araneomorphae have a single pair located anterolaterally of the epigastric furrow; Mygalomorphae and Gradungulidae have a second pair posterior of the epigastric furrow

Boss (= condyle) — a rounded swelling located at the base of the chelicera

Bristles — small rigid setae or small spines

Bulb (= bulbus = genital bulb = palpal organ) — the genital structure of the male spider

Calamistrum — a row of curved thick setae (rarely arranged in an oval patch) located dorsally along metatarsus IV of cribellate spiders; used for combing out silk from the cribellum

Carapace — dorsal part of the cephalothorax

Cephalic region (= caput = cephalon = *pars cephalica*) — the anterior (= head) portion of the carapace

Cephalon — see cephalic region

Cephalothorax (= prosoma) — the anterior division of the spider body

Chelicera (pl: chelicerae) — the anterior appendages of a spider (the "jaws") consisting of a large basal segment (paturon) and an apical fang

Cheliceral furrow (= fang furrow) — the groove of the chelicera into which the fang closes

Cheliceral teeth — large and/or tiny tooth-like projections on the cheliceral furrow margins

Chilum (pl: chila) — a small sclerite at the base of the chelicera (under the clypeus)

Clasping spur — a type of mating spur consisting of an enlarged, curved spine that articulates against the leg segment, as in Mysmenidae

Claw — see tarsal claw

Claw tuft — a dense brush of setae between the paired tarsal claws; almost always indicates the absence of the unpaired claw; tufts may be composed of simple setae or thick broad ones (= tenent setae)

Clypeus — the space between the anterior edge of the carapace and the anterior eyes

Colulus — a nonfunctional cribellum that may be as large as a cribellum but is more commonly reduced to a small fleshy lobe or even just a pair of setae

Conductor — the structure of the male palp associated with the embolus; may be sclerotised or hyaline

Copulatory ducts — ducts in the female genitalia which connect the copulatory pores to the spermathecae

Copulatory openings (= copulatory pores = epigynal openings) — external pores on the epigyna of entelegyne females

Copulatory pores — see copulatory openings

Coxa (pl: coxae) — the basal, or first, segment of a leg and palp

Cribellate — having a cribellum

Cribellum — a broad flat spinning plate anterior to the remaining spinnerets of cribellate spiders

Cymbium (pl: cymbia) — the adult male palpal tarsus, especially when modified as a spoon-shaped structure containing the palpal bulb

Diad — a pair of two contiguous eyes

Diaxial (= labidognathous) — downward projecting chelicerae with the fangs operating along the transverse axis; present in Araneomorphae

Distal (= apical) — toward the terminal portion of an appendage (away from the body)

Dorsal — upper surface (toward the top). Dorsal view

Dorsal groove — see fovea

Ecribellate — lacking a cribellum

Ectal — away from the midline of the body

Embolic division — in the Linyphiidae, the terminal portion of the palpal bulb, consisting of the radix, the embolus and various accessory sclerites. It is attached to the suprategulum by a narrow stalk

Embolus — the intromittent organ of the male palp, connected to the sperm reservoir; often slender, but variable in shape and length

Endite (= maxilla = gnathocoxa = gnathobase) — the expanded lobe of the palpal coxa situated laterally of the labium

Entelegyne (= entelegynous condition) — the derived form of spider genitalia where the female has external copulatory openings, typically on a sclerotised epigynum, and the male has relatively complex palpi. Also refers to the clade, Entelegynae, which includes the vast majority of living spiders. See haplogyne

Epigastric furrow — a transverse groove across the anterior ventral part of the abdomen

Epigyne — see epigynum

Epigynum (pl: epigyna) (= epigyne) — the sclerotised region of female spiders covering the internal genitalia and located between the book lungs and anterior of the epigastric furrow

Fang — the apical segment of a chelicera; has the opening of the venom gland

Fang furrow — see cheliceral furrow

Femur (pl: femora) — the third segment of the leg, outward from the body, located between the trochanter and patella

Foramen — an opening or orifice

Fovea (= dorsal groove = thoracic groove = furrow = pit) — the central depression in the carapace representing the invagination of the carapace where the stomach muscles attach

Genital bulb — see bulb

Gonopore — the genital opening, located in the middle of the epigastric furrow

Haplogyne (= haplogynous condition) — the primitive form of spider genitalia where the female has the copulatory openings internally, within the gonopore, and typically lacks a sclerotised epigynum, and the male has relatively simple palpi. This form is found in the basal spiders, including Mygalomorphae, Gradungulidae, and Haplogynae. See entelegyne.

Incertae sedis — of uncertain position

Labium (pl: labia) (= lip) — the anterior median extension of the sternum, which constitutes a separate sclerite

Labral spur — a short projection from the labrum of certain spiders (Anapidae)

Labrum — the upper lip (usually covered by the chelicerae and not easily visible)

Laterigrade — crab-like leg orientation with the legs directed outward from the body; these legs are twisted at the trochanter with the morphologically prolateral surface assuming a dorsal position (e.g., Thomisidae)

Macrosetae — see spines

Mastidion (pl: mastidia) — a tooth on the cheliceral face

Maxilla (pl: maxillae) — see endite

Median apophysis — on the male palp, a sclerotised structure in the lower center of the bulb

Median spinnerets — see posterior median spinnerets

Mesal — toward the midline of the body

Metatarsus (pl: metatarsi) — the 6th segment of the leg, located between the tibia and tarsus

Mygalomorphae — infraorder of spiders characterised by paraxial chelicerae and two pairs of book lungs

Nomen dubium (pl: nomina dubia) — Latin term for scientific names of unknown or doubtful application

Opisthosoma — see abdomen

Palp (= palpus = pedipalp) — the most anterior leg-like appendage in spiders

Palpal organ — see bulb

Palpus (pl: palpi) — see palp

Paracymbium (pl: paracymbia) — an appendage of the cymbium; usually a rigid outgrowth but may be flexibly attached by a membrane

Paraxial (= orthognathous) — type of chelicerae that project forward with fangs articulating along the longitudinal (vertical) axis (like the teeth of a garden rake); present in Mesothelae and Mygalomorphae

Pars cephalica — see cephalic region

Patella (pl: patellae) — the 4th segment of the legs and palpi outward from the body; it is a short, slightly curved segment located between the femur and tibia

Paturon — the basal segment of a chelicera

Pectinate — comb-like

Pedicel — the narrowed connection between the cephalothorax and abdomen; the "waist" of the spider

Pedipalp — see palp

Peg teeth — spine-like teeth on the chelicerae situated in sockets

PER — posterior eye row, see Fig. 1.5

PLE — posterior lateral eyes, see Fig. 1.6

PLS — posterior lateral spinnerets, see Fig. 1.15

Plumose setae — recumbent setae with long branches

PME — posterior median eyes, see Fig. 1.6

PMS — posterior median spinnerets, see Fig. 1.15

Porrect — extending forward; in spiders refers to the projecting diaxial chelicerae of certain Araneomorphae, as Dysderidae and some Desidae, to differentiate them from the paraxial chelicerae of Mygalomorphae

Posterior — back; toward the back. Posterior view

Posterior eye row (PER) — the posteriormost row of eyes, usually consisting of the posterior median and posterior lateral eyes. See Fig. 1.5

Posterior lateral eyes (PLE) — eyes situated on the posterolateral portion of the eye group. See Fig. 1.6

Posterior lateral spinnerets (PLS) — spinnerets that are located closest to the dorsum. See Fig. 1.15

Posterior median eyes (PME) — eyes situated on the posterio median portion of the eye group. See Fig. 1.6

Posterior median spinnerets (PMS) — spinnerets located between the posterior lateral spinnerets (PLS) and the anterior lateral spinnerets (ALS). See Fig. 1.15

Posterior spinnerets — see posterior lateral spinnerets

Process — outgrowth of surface, margin, or appendage

Procursus — retrolateral paracymbium found in pholcids

Procurved eye row — one in which the lateral eyes are positioned anterior to the median eyes

Prograde — typical leg orientation with the anterior pairs directed forward and the posterior pairs backwards (e.g., in Lycosidae)

Prolateral — on the anterior surface of an appendage

Promargin — the anterior margin of the cheliceral furrow in Araneomorphae (mesal margin in Mygalomorphae)

Promarginal — on the anterior margin

Prosoma — see cephalothorax

Proximal (= basal) — toward the body or the base

Radix — sclerotised apophysis of the male palp

Rastellum (pl: rastella) — a rake-like structure near the cheliceral fang base of some Mygalomorphae

Rebordered labium — one which is thicker apically than basally

Recurved eye row — one in which the lateral eyes are positioned posterior to the median eyes

Retrolateral — on the posterior surface of an appendage

Retromargin — the posterior margin of the cheliceral furrow in Araneomorphae (ectal margin in Mygalomorphae)

Retrolateral tibial apophysis (RTA) — a sclerotised process on the retrolateral face of the male palpal tibia

RTA — see retrolateral tibial apophysis

Scales — flattened setae of various shapes

Scape (= scapus) — an elongated process of some epigyna, usually posteriorly directed

Sclerite — a sclerotised plate

Sclerotised — thickened and hardened

Sclerotisation — the process of becoming sclerotised, or thickened and hardened

Scopula (pl: scopulae) — a brush of setae, such as the dense pads along the ventro-apical surface of the legs, where they may occur with or without claw tufts; also refers to the looser fringe of setae on the anterior edge of the endite and labium

Scutum (pl: scuta) (= scute) — sclerotised abdominal plate, usually dorsal, of some Araneomorphae

Secondarily haplogyne — entelegyne spiders that are characterised by the loss of the external copulatory openings of the female genitalia, therefore resembling haplogyne spiders.

Semidiaxial — chelicerae intermediate between the diaxial condition of araneomorphs and paraxial of mygalomophs, as in Grandungulidae

Serrula (pl: serrulae) — a row of tiny teeth along the anterior edge of the endite

Seta (pl: setae) — may be erect or recumbent; simple, serrate, feathery, to plumose, or clavate to broad scales

Sigilla (s = sigillum) — circular impressions or "dimples" on the abdomen and sternum of some spiders representing points of muscle attachment and endoskeletal attachments

Somatic — referring to non-reproductive structures

Spermatheca (pl: spermathecae) (= seminal receptacle) — internal sclerotised sperm-storage sacs present in all female spiders

Spigot — tiny cylindrical extension of the spinnerets from which silk is extruded

Spine (= macroseta) — a) pointed rigid structure situated in a socket and capable of articulating; as this is an enlarged seta, macroseta is a more correct although less often used term in spider taxonomy — b) solid, pointed extension of the cuticle

Spinnerets — finger-like or conical silk spinning organs located at the posterior end of the abdomen

Spiracle — the opening into the book lung or trachea

Sternum (pl: sterna) — the ventral sclerite of the cephalothora

Stridulatory file — a series of fine grooves used in conjunction with thorns to produce sound, typically located along the ectal margin of the chelicera or along the anteroventral margin of the abdomen.

Suprategulum — the basal sclerite of the male genital bulb

TA — tibial apophysis

Tarsal claw — sharp curved structure at the tip of the tarsus, typically 1 on the palp and 2 or 3 on the legs. See also paired claws and unpaired claw

Tarsal organ — sense organs, usually pit-like, on the dorsal surface of spider tarsi

Tarsal prong (= tarsal rod) — projecting membrane replacing the tarsal organ, as found in *Otira* (Amaurobiidae)

Tarsus (pl: tarsi) (= distitarsus) — the 7th or distal-most segment of the leg, the distal segment of the palp

Teeth — conical, pointed, rigid outgrowths of the margins of the cheliceral furrow

Tegulum — the middle sclerite of the male palp that contains the sperm duct and bears the embolus

Tibia (pl: tibiae) — 5th segment of the leg and palp; located between patella and metatarsus of leg, patella and tarsus of palp

Tibial apophysis (TA) — a process on the male palpal tibia, most commonly retrolateral, but may occur on other surfaces. See also retrolateral tibial apophysis

Tracheal spiracle — the opening to the tracheal respiratory system

Triad — a group of three contiguous eyes

Trichobothrium (pl: trichobothria) — a sensory seta (sensillum) arising from a round pit (bothrium); typically these are very slender and project vertically from the surface above the other setae

Trochanter — second segment of the leg or palp between the coxa and femur, often a short ring-shaped segment

Troglobite — obligate cave dwellers that typically show morphological adaptations to cave life such as loss of pigmentation, elongation of appendages and a reduction (partial or complete) of eyes

Troglophile — facultative cave dwellers; taxa that show affinities for cave habitats

Unpaired claw (= median claw) — the third claw (not paired) located apically on the tarsus; absent from male palpi

Ventral — bottom (toward the bottom), ventral view

TAXONOMIC INDEX

NOTE
Family names in capitals refer to the main entry for the family. Valid generic names are in bold type face.

A

abbreviata, Haplinis 56
abbreviatus, Attus 72
abdita, Cantuaria 28
absidata, Tekella 58
absurda, Metamynoglenes 57
accola, Mahura 80
acerba, Maorineta 56
acoreensis, Achaearanea 61
Acroaspis 48
adansoni, Hasarius 72, 73
adjacens, Diploplecta 56
Adoxotoma 73
adumbrata, Anoteropsis 95
aerescens, Anoteropsis 95
aerihirta, Laufeia 73
agama, Aorangia 85
Agelenidae 1, 3, 21, 63, 66, 80, 82, 85, 87
AGELENIDAE 80
Ageleninae 80
agilis, Cycloctenus 90
agrestis, Cambridgea 78
Ahua 80
akaroa, Runga 60
Akatorea 21, 85
alba, Huka 80
alba, Icona 62
alba, Pararchaea 44
albiapiata, Linyphia 55
albiceris, Laestrygones 83
albobarbatus, Salticus 72
albobrunnea, Cymbachina 74
albocinctum, Theridion 62
albolimbata, Diaea 74
albolineata, Cryptaranea 48
albopalpis, Salticus 72
albopunctatus, Uliodon 92
albovittatum, Hypoblemum 12, 72, 73
algida, Waiporia 34
Algidiella 42
Alistra 65
allanae, Neoramia 80
allani, Cantuaria 28
Allotrochosina 95
alpina, Anoteropsis 95
alpina, Tangata 34
alpina, Toxopsiella 90
alpinus, Salticus 72
alta, Duripelta 33
alta, Kapanga 65
alta, Neoramia 80
alta, Orepukia 81
alticola, Haplinis 56
altus, Plectophanes 90
Amaurobiidae 1, 3, 16, 21, 22, 63, 66, 80, 82, 85, 87, 107
AMAUROBIIDAE 87
Amaurobiodininae 68
Amaurobioidea 82
Amaurobioides 68
Amaurobioididae 1, 68, 89
ambara, Diaea 74
ambigua, Cambridgea 78
ambigua, Parafroneta 57
amira, Hapona 83
amoena, Laetesia 56
Amphinecta 21, 85
Amphinectidae 1, 3, 20, 21, 22, 41, 63, 80, 82, 85, 87
AMPHINECTIDAE 85
ampliatum, Theridion 62
amplius, Neomyro 83
Anapidae 1, 11, 24, 42, 53, 54, 61, 106
ANAPIDAE 54
Anaua 90
anceps, Novalaetesia 56
angularis, Sidymella 74
angulata, Sidymella 74
angustiae, Dunstanoides 85
annulata, Cambridgea 78
annulipes, Novafroneta 57
annulipes, Oecobius 38
anomala, Haplinis 56
Anopsolobus 33
Anoteropsis 95
ansa, Aorangia 85
antarctica, Huara 86
antipoda, Rayforstia 42
antipodiana, Cambridgea 78
antipodiana, Haplinis 56
antipodiana, Porrhothele 12, 25
antipodianum, Pholcomma 62
antipodianus, Argyrodes 61, 62
antipodianus, Episinus 62
Anyphaenidae 17, 68, 89
ANYPHAENIDAE 68
Anzacia 76
Aorangia 20, 80, 85
Aotearoa 45
Aparua 26
aperta, Cantuaria 28
apica, Cantuaria 28
apica, Reinga 86
apicus, Hypodrassodes 76
apicus, Paramyro 81
appressus, Holoplatys 73
aquaticus, Dolomedes 94
aquilonalis, Paramamoea 86
aquilus, Attus 72
Arachnura 48
Araeoncus 56
Araneidae 1, 12, 24, 39, 47, 48, 50, 52, 53
ARANEIDAE 48
Araneinae 48
Araneomorphae 14, 15, 105, 106, 107
Araneus 48
Arangina 64
arawa, Paramamoea 86
arborea, Nomaua 59
arboricola, Cambridgea 78
arboris, Nuisiana 82
archeyi, Cosmophasis 73
archeyi, Plectophanes 90
arenaria, Marpissa 73
arenivaga, Anoteropsis 95
argentatulum, Theridion 62
Argiope 48
Argoctenus 71
Argyrodes 61, 62
Ariadna 30
Ariamnes 62
armata, Zealanapis 54
armifera, Marpissa 73
Artoria 95
Artoriinae 95
Ascuta 33
assimilis, Cantuaria 28
assimilis, Mamoea 86
atkinsoni, Celaenia 48
atra, Novalaetesia 56
atratus, Salticus 72
atrihastula, Cryptaranea 48
atritus, Latrodectus 61
attenuata, Haplinis 56
attenuata, Metamynoglenes 57
Attus 72
aucklandensis, Hapona 83
aucklandensis, Laetesia 56
aucklandensis, Reinga 86
aucklandensis, Rorea 86
aucklandica, Algidiella 42
aucklandica, Textricella 42
Auhunga 87
aurens, Argoctenus 71
aureus, Argoctenus 71
auricoma, Trite 73
australasia, Poecilopachys 49
australis, Ascuta 33
australis, Cambridgea 78
australis, Drapetisca 56
australis, Duripelta 33
australis, Haplinis 56
australis, Maniho 86
australis, Matachia 82
australis, Meringa 60
australis, Migas 27
australis, Pounamuella 34
australis, Rapua 82
australis, Tekelloides 58
australis, Toxopsiella 90
australis, Viridictyna 64

australis, Zealanapis 54
Australomimetus 39

B

Baalzebub 52
Backobourkia 48
Badumna 12, 21, 75, 82
bainhamensis, Mahura 80
banksi, Haplinis 56
barbigera, Ariadna 30
barresi, Clynotis 73
Bealeyia 33
bellatoria, Ariadna 30
bellicosa, Notocosa 95
bellissima, Laetesia 56
benhami, Sidymella 74
Bianor 73
bicolor, Mamoea 86
bipectinata, Stanwellia 26
bisetosa, Tekella 58
blackwallii, Scotophaeus 76
blanda, Porrhothele 25
blattea, Cryptachaea 61, 62
blattifera, Laperousea 55, 56
blesti, Anoteropsis 95
blesti, Clubiona 69
boara, Mahura 80
bola, Rinawa 65
borealis, Cantuaria 28
borealis, Duripelta 33
borealis, Meringa 60
borealis, Migas 27
brevipes, Haplinis 56
brisbanae, Araneus 48
brounii, Backobourkia 12, 48
brunnea, Colaranea 48
buechlerae, Pakeha 87
busa, Gasparia 82

C

cada, Clubiona 69
calypso, Makora 86
Cambridgea 12, 78
cambridgei, Clubiona 69
cambridgei, Migas 27
canasta, Otira 87
cancerides, Delena 67
canescens, Anoteropsis 95
Cantuaria 28
cantuaria, Anoteropsis 95
cantuaria, Ascuta 33
cantuaria, Hexathele 25
cantuaria, Mamoea 86
cantuaria, Notomatachia 82
cantuaria, Pahora 60
cantuaria, Rinawa 65
cantuarius, Maniho 86
cantuarius, Migas 27
capensis, Steatoda 12, 61, 62
cardronaensis, Zealoctenus 17, 89
Cassafroneta 56
caswell, Mangua 60
catlinensis, Cantuaria 28
catlinensis, Orepukia 81
cauda, Nomaua 59
caudata, Poecilafroneta 57
cavata, Tuapoka 81
cavernicola, Hexathele 25
cavernicola, Maloides 22, 87
cavernicola, Spelungula 29
Celaenia 48
celeripes, Tararua 81
centralis, Alistra 65
centralis, Cycloctenus 90
centralis, Maniho 86
centralis, Meringa 60
centralis, Migas 27
centralis, Subantarctia 34
centralis, Toxopsiella 90
cervinus, Uliodon 92
chapmanae, Huara 86
charybdis, Neoramia 80
chathamensis, Clubiona 69
chathamensis, Laestrygones 83
chathamensis, Oramia 81
chathamensis, Otagoa 69, 83
chathamensis, Waiporia 34
chathami, Laetesia 56
Cheiracanthium 18, 68, 89
childi, Neoramia 80
chiltoni, Haplinis 56
Chiracanthium 89
cineracea, Marpissa 73
cinerea, Ocrisiona 73
circe, Neomyro 83
clara, Tararua 81
clarki, Gohia 83
clima, Clubiona 69
Clubiona 69
Clubionidae 1, 18, 68, 69, 70, 76, 89
CLUBIONIDAE 69
Clynotis 72, 73
clypeata, Zearchaea 45
cockayni, Pacificana 19, 89
cognata, Cantuaria 28
Colaranea 48
collensis, Cantuaria 28
communis, Diploplecta 56
compactus, Bianor 73
complexa, Pounamuella 34
confusa, Parafroneta 57
conica, Zealanapis 54
conifera, Moneta 62
consensa, Clubiona 69
contorta, Haplinis 56
contorta, Panoa 82
contrita, Clubiona 69
convoluta, Clubiona 69
convoluta, Hulua 83
convoluta, Mangua 60
conway, Meringa 60
cooki, Attus 72
cooki, Mamoea 86
coriacea, Gasparia 83
Corinnidae 12, 17, 70, 75
CORINNIDAE 70
Corinninae 70
cornigera, Arangina 64
cornigera, Waterea 86
Cosmophasis 73
courti, Hypodrassodes 76
courti, Pahoroides 60
crassa, Zealaranea 49
crassus, Hypodrassodes 76
crinifrons, Nomaua 59
crispipes, Hogna 95
cristatus, Diplocephalus 55, 56
crocata, Dysdera 12, 31
crucifera, Neoramia 80
cruciferum, Theridion 62
cruentum, Linyphia 55
Cryptachaea 62
crypta, Hapona 83
crypta, Mahura 80
Cryptaranea 48
Ctenidae 1, 71, 89
Ctenizidae 1, 28
cumberi, Migas 27
curvus, Salticus 72
Cyatholipidae 1, 23, 35, 55, 58, 59, 61
CYATHOLIPIDAE 58
Cycloctenidae 1, 19, 20, 41, 67, 90, 94, 95
CYCLOCTENIDAE 90
Cycloctenus 90
Cyclosa 48
cylindrata, Lampona 12, 75
Cymbachina 74
Cyrtophora 48

D

dalmasi, Hypodrassodes 76
dalmasi, Neolana 86
decemmaculata, Amphinecta 85
decolor, Dunedinia 56
decorata, Cambridgea 78
decorata, Huara 86
decorosa, Acroaspis 48
decorosa, Eriophora 48
Deinopidae 19, 46, 72
DEINOPIDAE 46
Deinopis 46
dejecta, Amphinecta 85
Delena 67
delicata, Clubiona 69
delli, Cantuaria 28
delli, Gasparia 83
demota, Parafroneta 57
dendyi, Cantuaria 28
dentata, Ahua 80
dentata, Gasparia 83
dentichelis, Lessertia 56
denticulata, Dunedinia 56
depressa, Cantuaria 28

Desidae 1, 3, 12, 20, 21, 22, 63, 64, 69, 75, 80, 82, 85, 87, 90, 106
DESIDAE 82
Desinae 82
Desis 82
detrita, Mahura 80
detrita, Makora 86
detrita, Porotaka 81
Diaea 74
Diaprograpta 89
Dictynidae 1, 15, 64
DICTYNIDAE 64
Dictynoidea 82
diloris, Haplinis 56
Diplocephalus 56
Diploplecta 55, 56
Dipluridae 1, 25, 26
distincta, Laetesia 56
distinctus, Migas 27
distinctus, Notiodrassus 77
diversa, Makora 86
diversa, Tararua 81
divisus, Scotospilus 65
Dolomedes 94
dolosa, Huara 86
domestica, Tegenaria 80
drama, Icona 62
Drapetisca 56
dromedaria, Leucauge 50
Dugdalea 33
dugdaleae, Megafroneta 57
dugdalei, Marplesia 86
dugdalei, Orepukia 81
dugdalei, Subantarctia 34
dugdalei, Toxopsiella 90
dugdalei, Turretia 34
dunedinensis, Cantuaria 28
Dunedinia 55, 56
dunstani, Haplinis 56
Dunstanoides 21, 85, 86
duplex, Cycloctenus 90
duplex, Diploplecta 56
duplex, Pakeha 87
Duripelta 33
Dysdera 31
Dysderidae 12, 16, 30, 31, 32, 33, 37, 106
DYSDERIDAE 31
Dysderinae 31

E

edulis, Nephila 51
edwardsi, Gasparia 83
egmont, Duripelta 33
egmontensis, Orepukia 81
egmont, Waiporia 34
electa, Goyenia 82
elegans, Cambridgea 78
elongata, Cambridgea 78
elongata, Megafroneta 57
elongata, Wiltonia 34
elongata, Zelanda 77
embolica, Hinewaia 73
Entelegynae 106
Episinus 62
erebus, Zelanda 76, 77
Erigone 56
Erigoninae 56
Eriophora 48
Eryciniolia 24, 50
Eterosonycha 42
Euryopis 38, 61, 62
Eutichurinae 89
excavata, Celaenia 48
exemplar, Hexathele 25
exigua, Haplinis 56
extensa, Waiporia 34
eylesi, Wiltonia 34

F

faceta, Forsterella 66
facetum, Stiphidion 20, 78
facetus, Dolomedes 94
falxiata, Gohia 83
fasciata, Cambridgea 78
feredayi, Arachnura 48
festiva, Kapanga 65
festiva, Matua 77
figurata, Makora 86
filicicola, Haurokoa 88
filicicola, Wiltona 88
finschi, Neoramia 80
fiordensis, Aorangia 85
fiordensis, Cycloctenus 90
fiordensis, Neoramia 80
fiordensis, Notiodrassus 77
fiordensis, Panoa 82
fiordensis, Subantarctia 34
fiordensis, Wiltonia 34
fiordensis, Zearchaea 45
flabelliferum, Theridion 62
flagellata, Metamynoglenes 57
flavescens, Anoteropsis 95
flavida, Tetragnatha 50
flavonotatus, Tekelloides 58
flora, Mangua 60
flora, Runga 60
florae, Mamoea 86
florae, Orepukia 81
florae, Porotaka 81
florae, Subantarctia 34
fluviatilis, Haplinis 56
foliata, Cambridgea 78
foordi, Tararua 81
Forsterella 66
forsteri, Adoxotoma 72, 73
forsteri, Anoteropsis 95
forsteri, Cassafroneta 56
forsteri, Mangua 60
forsteri, Ozarchaea 44
forsteri, Zeatupua 60
Forstertyna 63
Forstrarchaea 44
foveata, Holomamoea 86
fradeorum, Mermessus 55, 56
frenatus, Uliodon 92
fresa, Goyenia 82
frigida, Pseudafroneta 57
frondosus, Mesudus 82
frontalis, Plectophanes 90
fucatinia, Haplinis 56
fugax, Cycloctenus 90
fulvolineata, Haplinis 56
fumosus, Salticus 72
funerea, Supunna 70
furcata, Tangata 34
furvus, Salticus 72

G

Gasparia 22, 82, 83
gatenbyi, Migas 27
gemmea, Anzacia 76
gentilis, Maorineta 56
gentilis, Nanometa 50
geophila, Orepukia 81
germana, Laetesia 56
gigas, Megafroneta 57
gilliesii, Cantuaria 28
Gippsicola 30
giveni, Migas 27
gladiatrix, Novafroneta 57
Gnaphosidae 1, 18, 67, 69, 75, 76
GNAPHOSIDAE 76
Gohia 82, 83
goyderi, Venatrix 95
Goyenia 82
goyeni, Migas 27
gracilipes, Nanocambridgea 78
gracilipes, Oxyopes 93
gracilipes, Theridion 62
gracilis, Akatorea 85
gracilis, Metamynoglenes 57
Gradungula 29, 94
Gradungulidae 14, 29, 94, 95, 105, 106, 107
GRADUNGULIDAE 29
graminicola, Pahora 60
graminicola, Poaka 87
graminicola, Wiltonia 34
grana, Kapanga 65
grandiosa, Mamoea 86
grandis, Cantuaria 28
grandis, Nanocambridgea 78
grandis, Promynoglenes 57
gratiosa, Goyenia 82
grayi, Procambridgea 78
gressitti, Waipoua 34
grisea, Orepukia 81
grossa, Huara 86
grossa, Reinga 86
grossa, Steatoda 12, 61, 62
gunni, Mangua 60

H

Hahniidae 1, 19, 65

HAHNIIDAE 65
hallae, Anoteropsis 95
hama, Neorepukia 81
Hanea 58
Haplinis 56
Haplogynae 106
Hapona 83
hapua, Stanwellia 26
Hasarius 73
hasseltii, Latrodectus 12, 61, 62
hastata, Huara 86
Haurakoa 88
haurokoae, Parafroneta 57
hauroko, Pounamuella 34
hawea, Waiporia 34
hectori, Celaenia 48
helicoides, Metamynoglenes 57
Helpis 73
Helsonia 82
Hemicloea 76
herbigrada, Trite 73
heroine, Eriophora 48
hesperis, Dunstanoides 85
hesperis, Mamoea 86
hesperus, Migas 27
Heteropoda 67
Hexathele 25
Hexathelidae 12, 14, 25, 26, 27, 28
HEXATHELIDAE 25
Hexathelinae 25
hickmani, Kapanga 65
hickmani, Pholcomma 61, 62
hilaris, Anoteropsis 12, 95
hila, Waipoua 34
hiloa, Pakeha 87
hinaka, Meringa 60
hinawa, Dunstanoides 85
Hinewaia 72, 73
hinua, Mahura 80
hirsuta, Notomatachia 82
hirsuta, Parafroneta 57
hochstetteri, Hexathele 25
hoggi, Neoramia 80
Hogna 95
hokina, Neoramia 80
Holarchaea 43
Holarchaeidae 23, 43, 44, 45
HOLARCHAEIDAE 43
hollowayae, Plectophanes 90
hollowayae, Pounamuella 34
hollowayi, Migas 27
hollowayi, Stanwellia 26
Holomamoea 22, 86
Holoplatys 73
homerica, Neororea 86
Horioctenoides 71
hornabrooki, Waiporia 34
horningi, Haplinis 56
horningi, Tangata 34
horningi, Toxopsiella 90
hospita, Artoria 95
houhora, Stanwellia 26
hova, Dunstanoides 85
Huara 21, 86
hughsoni, Mamoea 86
hughsoni, Mangua 60
Huka 80
huka, Hexathele 25
Hulua 21, 83
humilis, Araeoncus 56
hunua, Duripelta 33
Huttonia 41
huttoni, Cantuaria 28
huttoni, Clubiona 69
huttoni, Dolomedes 94
huttoni, Hexathele 25
Huttoniidae 3, 12, 15, 37, 41
HUTTONIIDAE 41
huttoni, Toxopsoides 20, 82, 83
huttoni, Waitetola 21, 87
Hyperafroneta 57
Hypoblemum 72, 73
Hypodrassodes 18, 76

I

Icona 61, 62
Idiopidae 14, 25, 26, 27, 28
IDIOPIDAE 28
ilamia, Paradictyna 64
inaequalis, Cambridgea 78
inanga, Alistra 65
incerta, Paramamoea 86
incerta, Pseudafroneta 57
incertoides, Paramamoea 86
incurvata, Metamynoglenes 57
indura, Otira 87
inexacta, Haplinis 56
inflata, Huara 86
innotabilis, Haplinis 56
inopinata, Ascuta 33
inornata, Mamoea 86
inornata, Pakeha 87
insignis, Badumna 12, 82
insignis, Haplinis 56
insignita, Pakeha 87
insula, Ahua 80
insula, Ascuta 33
insula, Hapona 83
insula, Orepukia 81
insula, Parafroneta 57
insula, Paranapis 54
insula, Pounamuella 34
insula, Rayforstia 42
insula, Waipoua 34
insula, Zealanapis 54
insulana, Cambridgea 78
insulana, Cantuaria 28
insulana, Paramamoea 86
insulanus, Hypodrassodes 76, 77
insulanus, Maniho 86
insulare, Kaitawa 76, 77
insularis, Anoteropsis 95
insularis, Migas 27
intermedia, Laetesia 56
Intruda 77
invisibilis, Cryptaranea 48
Ischalea 78
isolata, Aorangia 85
isolata, Cantuaria 28
isolata, Gohia 83
isolata, Paranapis 54
isolata, Pianoa 29
isolata, Tautukua 34
Isopeda 67
Isopedella 67
isopus, Hypodrassodes 76, 77
isulata, Kapanga 65
Ixeuticus 82

J

janus, Neoramia 80
johnsi, Cantuaria 28
Jotus 73

K

kaiangaroa, Gasparia 83
Kaitawa 76, 77
kaituna, Ahua 80
kaituna, Muritaia 87
kaituna, Pahora 60
kaituna, Stanwellia 26
kaituna, Zelanda 77
kakahuensis, Cantuaria 28
kakanuiensis, Cantuaria 28
Kapanga 65
Kapitia 32
kapitiensis, Aorangia 85
kapiti, Mangua 60
karamea, Oparara 86
katipo, Latrodectus 12, 61, 62
kikkawa, Huara 86
kikkawai, Viridictyna 64
kirki, Migas 27
kirki, Pakeha 87
knoxi, Clynotis 73
kochi, Dunstanoides 86
kochi, Migas 27
koha, Neoramia 80
kohua, Hexathele 25
kohuka, Tangata 34
komata, Neoramia 80
konei, Venatrix 95
koomaa, Duripelta 33
kuscheli, Pounamuella 34
kuscheli, Zealanapis 54

L

lacustris, Anoteropsis 95
Laestrygones 82, 83
Laetesia 55, 56
laevigata, Novaranea 48, 49

lagenifera, Orsinome 50
Lamina 22, 82, 83
Lampona 12, 75
Lamponidae 12, 18, 70, 75, 76
LAMPONIDAE 75
Lamponinae 75
Laperousea 55, 56
lateralis, Dolomedes 94
Latrodectus 12, 61, 62
Laufeia 73
lawrencei, Toxopsiella 90
leith, Ascuta 33
leith, Meringa 60
lepida, Steatoda 61, 62
lepidus, Argyrodes 62
lepidus, Cycloctenus 90
Lessertia 56
Leucauge 24, 50
Leucauginae 50
leucocomis, Ocrisiona 73
leucophaea, Marpissa 73
liana, Otira 87
lima, Wiltonia 34
linburnensis, Migas 27
lineata, Pseudafroneta 57
lineata, Tekella 58
Linyphiidae 1, 12, 24, 35, 39, 55, 56, 59, 105
LINYPHIIDAE 55
Linyphiinae 55, 56
litoralis, Anoteropsis 95
littoralis, Gasparia 83
littoralis, Oramia 81
livor, Matachia 82
lobata, Huka 80
lobata, Pakeha 87
lomasi, Cantuaria 28
lomasi, Gasparia 83
lomasi, Migas 27
longicrure, Theridion 62
longinqua, Badumna 12, 82
longipes, Cambridgea 78
longipes, Sidymella 74
longispinata, Muritaia 87
luana, Kapanga 65
lucrosa, Goyenia 82
luta, Amphinecta 85
Lycosidae 11, 12, 20, 29, 90, 92, 94, 95, 106
LYCOSIDAE 95
Lycosinae 95

M

mackerrowi, Oramia 81
Macrothelinae 25
maculata, Mangareia 82
maculatus, Bianor 72, 73
magna, Aotearoa 45
magna, Cantuaria 28
magna, Maoriata 34
magna, Matachia 82
magna, Metamynoglenes 57
Mahura 80
maitaia, Hexathele 25
major, Amaurobioides 68
major, Haplinis 55, 56
makarora, Mangua 60
Makora 21, 86
Malkara 40
Malkaridae 3, 22, 39, 40
MALKARIDAE 40
Malkarinae 40
Maloides 87
Malthonica 80
Mamoea 22, 85, 86
mamoea, Neoramia 80
mana, Kapanga 65
manapouri, Pakeha 87
Manawa 82
mandibularis, Mamoea 86
manga, Hulua 83
manga, Kapanga 65
mangamuka, Gasparia 83
Mangareia 82
mangareia, Alistra 65
Mangua 59, 60
Maniho 21, 86
manneringi, Gasparia 83
Maoriata 34
maorica, Mamoea 86
maoricus, Hypodrassodes 76, 77
Maorineta 56
mara, Amphinecta 85
marama, Neoramia 80
margaretae, Neoramia 80
marina, Desis 82
marina, Marpissa 72, 73
marinus, Myro 83
maritima, Amaurobioides 68
Marpissa 73
Marplesia 21, 85, 86
marplesi, Cantuaria 28
marplesi, Forstertyna 63
marplesi, Goyenia 82
marplesi, Haplinis 56
marplesi, Hapona 83
marplesi, Huara 86
marplesi, Matachia 82
marplesi, Migas 27
marplesi, Oramia 81
marrineri, Parafroneta 57
martius, Ixeuticus 82
Matachia 21, 82
Matua 76, 77
matua, Neoramia 80
matua, Zealanapis 54
mauii, Aorangia 85
mawhero, Duripelta 33
maxima, Cantuaria 28
maxima, Pakeha 87
maxima, Pseudafroneta 57
mcfarlanei, Rayforstia 42
Mecysmaucheniidae 23, 43, 44, 45
MECYSMAUCHENIIDAE 45
Mecysmaucheniinae 45
media, Ascuta 33
media, Pahora 60
media, Pakeha 87
media, Reinga 86
media, Stanwellia 26
medialis, Cantuaria 28
medialis, Mangua 60
medialis, Orongia 34
medialis, Toxopsiella 90
Megadictyna 63
Megadictyninae 63
Megafroneta 57
melanopygius, Ostearius 55, 56
melanoviridis, Colaranea 48
mendicus, Australomimetus 39
mensa, Waiporia 34
mercurialis, Cambridgea 78
meridionalis, Maniho 86
Meringa 60
Mermessus 56
Mesothelae 106
Mesudus 82
Meta 24, 48, 50, 63
Metafroneta 57
Metainae 50
Metamynoglenes 57
Microctenonyx 56
Micropholcommatidae 24, 42, 54
MICROPHOLCOMMATIDAE 42
Micropholcommatinae 42
Migas 27
Migidae 1, 14, 25, 26, 27, 28
MIGIDAE 27
Miginae 27
milina, Amphinecta 85
Mimetidae 22, 39, 40
MIMETIDAE 39
Mimetus 39
mimica, Makora 86
minax, Trite 72
minima, Huka 80
minima, Hulua 83
minima, Metafroneta 57
minima, Pakeha 87
minitabunda, Helpis 12, 72, 73
minor, Amaurobioides 68
minor, Cantuaria 28
minor, Dolomedes 94
minor, Laetesia 56
minor, Lamina 83
minor, Maorineta 56
minor, Migas 27
minuscula, Promynoglenes 57
minuta, Duripelta 33
minuta, Huka 80
minuta, Neoramia 80
minuta, Parafroneta 57
minuta, Promynoglenes 57
minuta, Toxopsiella 90
minutissima, Haplinis 56
minutissimus, Laestrygones 83
mirada, Tuakana 82
mira, Dunstanoides 86

miranda, Zelanda 77
mirificus, Dolomedes 94
Misgolas 28
Miturga 92
Miturgidae 17, 18, 19, 68, 89, 92
MITURGIDAE 89
Miturginae 89
moana, Hapona 83
moana, Porrhothele 25
moana, Runga 60
modesta, Porrhothele 25
modica, Waiporia 34
mollis, Maorineta 56
momona, Hapona 83
Moneta 62
monowai, Ascuta 33
monowai, Duripelta 33
montana, Anoteropsis 95
montana, Ascuta 33
montana, Dunstanoides 86
montana, Gasparia 83
montana, Lamina 83
montana, Mamoea 86
montana, Maoriata 34
montana, Pahora 60
montana, Waipoua 34
montana, Zealanapis 54
monticola, Mamoea 86
monticola, Parafroneta 57
monticolus, Attus 72
montinus, Attus 72
morainicola, Haplinis 57
mora, Panoa 82
motu, Mangareia 82
motueka, Orongia 34
muka, Subantarctia 34
mula, Amphinecta 85
multicolor, Linyphia 55
multidentata, Goyenia 82
multipunctata, Tetragnatha 50
munda, Tharpyna 74
mundenia, Haplinis 57
mura, Huara 86
murihiku, Pahora 60
murihiku, Tangata 34
murina, Lampona 12, 75
Muritaia 22, 87
musca, Ascuta 33
musca, Mahura 80
muscicola, Aorangia 85
muscicola, Hapona 83
mustilina, Trite 73
myersi, Cantuaria 28
Mygalomorphae 14, 105, 106, 107
Mynogleninae 55, 56
Myro 22, 82, 83
Myroninae 82
Mysmena 53
Mysmenidae 3, 15, 42, 48, 52, 53, 54, 105
MYSMENIDAE 53

N

nana, Euryopis 62
nana, Neoramia 80
Nanocambridgea 78
Nanometa 24, 50
Nanometidae 50
Nanometinae 50
napua, Alistra 65
napua, Cantuaria 28
Nauhea 76, 77
nava, Gasparia 83
navus, Oecobius 38
nebulosa, Gasparia 83
nelson, Meringa 60
nelson, Nomaua 59
nelsonensis, Cycloctenus 90
nelsonensis, Gasparia 83
nelsonensis, Scotospilus 65
nelsonensis, Toxopsiella 90
nelsonensis, Viridictyna 64
nelsonensis, Wiltonia 34
Nemesiidae 14, 25, 26, 27, 28
NEMESIIDAE 26
Nemoctenus 71
nemoralis, Marpissa 73
nemoralis, Tekella 58
Neolana 21, 80, 85, 86
Neolanidae 1, 41, 85
Neomyro 22, 82, 83
Neoramia 80
Neorepukia 80
Neororea 21, 86
Neoscona 49
Nephila 51
Nephilidae 24, 51
NEPHILIDAE 51
Nesticodes 62
ngaitahu, Maniho 86
ngongotaha, Metamynoglenes 57
Nicodamidae 1, 15, 63
NICODAMIDAE 63
nigra, Hexathele 25
nigra, Tangata 34
nigra, Taliniella 42
nigricans, Tetragnatha 50
nina, Runga 60
nitens, Tetragnatha 50
nobilis, Promynoglenes 57
Nomaua 59
nota, Orepukia 81
Notiodrassus 76, 77
Notocosa 95
Notomatachia 21, 82
nova, Novafroneta 57
nova, Otagoa 83
novaeseelandiae, Holarchaea 43
novaezealandiae, Pua 42
Novafroneta 57
Novakiella 49
Novalaetesia 56
Novanapis 54
Novaranea 48, 49
nuda, Diploplecta 56
Nuisiana 21, 22, 82
nummosa, Orepukia 81
nuntia, Dunstanoides 86
nuntia, Gasparia 83

O

obscura, Aorangia 85
obscura, Cambridgea 78
obscura, Hyperafroneta 57
obscura, Kapitia 32
obtusa, Protoerigone 57
obtusa, Zelanda 77
occidentalis, Cambridgea 78
occidentalis, Oramia 81
Ocrisiona 73
oculata, Dugdalea 33
Oecobiidae 15, 38
OECOBIIDAE 38
oecobioides, Phycosoma 61, 62
Oecobius 38
okatainae, Anoteropsis 95
olivacea, Celaenia 48
olvidada, Laetesia 56
Oonopidae 3, 16, 31, 32, 33, 37, 41
OONOPIDAE 32
opaca, Diploplecta 56
opaca, Paravoca 87
Oparara 21, 86
oparara, Gasparia 83
oparara, Mangua 60
opina, Alistra 65
Oramia 80, 81
Oramiella 80, 81
Orchestina 32
ordishi, Cambridgea 78
Orepukia 80, 81
orepukiensis, Cantuaria 28
orepukiensis, Tangata 34
orientalis, Muritaia 87
orientalis, Neoscona 49
orientalis, Toxopsiella 90
ornata, Ascuta 33
ornata, Goyenia 82
Orongia 34
orophila, Orepukia 81
oroua, Neoramia 80
Orsinome 24, 50
Orsolobidae 1, 12, 16, 31, 32, 33, 37, 41
ORSOLOBIDAE 33
Ostearius 56
otago, Meringa 60
otago, Tangata 34
otago, Zealanapis 54
Otagoa 22, 82, 83
otagoa, Hapona 83
otagoa, Neoramia 80
otagoa, Protoerigone 57
otagoensis, Akatorea 85
otagoensis, Laestrygones 83
otagoensis, Maniho 86

otagoensis, Paravoca 87
otagoensis, Rinawa 65
otagoensis, Rorea 86
otara, Duripelta 33
otari, Migas 27
otiana, Waipoua 34
Otira 22, 87
otira, Aorangia 85
otira, Hexathele 25
otira, Mamoea 86
otira, Mangua 60
ovalis, Huara 86
ovalis, Tuapoka 81
owaka, Waiporia 34
Oxyopes 93
Oxyopidae 19, 93
OXYOPIDAE 93
Ozarchaea 44

P

Pacificana 89
pagana, Malthonica 80
Pahora 60
Pahorinae 59
Pahoroides 59, 60
paihia, Hapona 83
Pakeha 22, 87
pallida, Amaurobioides 68
pallida, Duripelta 33
pallida, Huka 80
pallida, Neolana 86
pallida, Orepukia 81
pallida, Pseudafroneta 57
pallidula, Cambridgea 78
palpimanoides, Huttonia 41
pana, Hulua 83
Pandercetes 67
pandora, Paramamoea 86
Panoa 21, 82
para, Hexathele 25
parabusa, Muritaia 87
Paradictyna 64
paradisica, Paramamoea 86
paradoxa, Haplinis 57
paradoxus, Migas 27
Parafroneta 57
parafurcata, Tangata 34
paragermana, Laetesia 56
Paralobus 34
Paramamoea 22, 85, 86
Paramyro 81
parana, Lamina 83
Paranapis 54
parapicus, Paramyro 81
Parapua 42
Pararchaea 44
Pararchaeidae 23, 43, 44, 45
PARARCHAEIDAE 44
Parasteatoda 62
paratecta, Pakeha 87
Paravoca 22, 87
paringa, Duripelta 33
paringa, Mangua 60
parisolata, Gohia 83
parmulata, Novafroneta 57
parornata, Ascuta 33
parrotti, Cantuaria 28
parrotti, Pakeha 87
parrotti, Toxopsiella 90
parva, Gasparia 83
parva, Otira 87
parva, Paramamoea 86
parva, Viridictyna 64
parvula, Promynoglenes 57
parvula, Trite 73
paturau, Cycloctenus 90
paturau, Hanea 58
pecki, Wiltonia 34
pectinata, Auhunga 16, 22, 87
peculiaris, Cambridgea 78
peculiaris, Clubiona 69
peelensis, Cambridgea 78
peelensis, Rangitata 86
peha, Duripelta 33
pellos, Linyphia 55
penara, Subantarctia 34
penna, Celaenia 48
peramoena, Laetesia 56
perdita, Nomaua 59
Periegopidae 3, 16, 37, 41
PERIEGOPIDAE 37
Periegops 37
peronianus, Pandercetes 67
perplexa, Pseudafroneta 57
perplexa, Toxopsiella 20, 90
persimilis, Parafroneta 57
petriei, Hexathele 25
phalangioides, Pholcus 12, 35
Pholcidae 12, 19, 35, 36, 50, 59
PHOLCIDAE 35
Pholcomma 42, 54, 61, 62
Pholcus 35
Phoroncidia 61, 62
Phycosoma 62
Physogleninae 59, 60
Pianoa 29
picata, Viridictyna 64
picta, Supunna 12, 17, 70, 75
picuna, Amaurobioides 68
pika, Amphinecta 85
pila, Amphinecta 85
pilama, Cantuaria 28
pilama, Neorepukia 81
pilgrimi, Aorangia 85
pilgrimi, Plectophanes 90
pilosa, Mamoea 86
pilosa, Parafroneta 57
Pisauridae 20, 29, 71, 92, 94, 95
PISAURIDAE 94
piscator, Amaurobioides 68
plagiata, Cambridgea 78
plagiata, Prasonica 49
planiceps, Trite 12, 72, 73
planissima, Holoplatys 73
plata, Helsonia 82
plebeia, Rayforstia 42
Plectophanes 90
plena, Tangata 34
plenus, Scotospilus 65
pleta, Amaurobioides 68
Plexippus 73
pluta, Gasparia 83
pluva, Arangina 64
Poaka 22, 87
Poecilafroneta 57
Poecilopachys 49
pohara, Amaurobioides 68
pohara, Marplesia 86
ponanga, Waipoua 34
poppelwelli, Aorangia 85
poppelwelli, Orepukia 81
Poria 65
porina, Wiltonia 34
Porioides 65
Porotaka 81
porphyreticum, Theridion 62
Porrhothele 25
pouaka, Tangata 34
Pounamuella 34
Prasonica 49
pretiosus, Scotophaeus 76, 77
prina, Cantuaria 28
prina, Orepukia 81
prina, Zealaranea 49
Procambridgea 78
producta, Clubiona 69
prominens, Erigone 55, 56
prominens, Laetesia 56
prominula, Pseudafroneta 57
Promynoglenes 57
propinqua, Rayforstia 42
protecta, Pakeha 87
protensa, Argiope 48
Protoerigone 57
proxima, Diploplecta 56
Psechridae 1, 87, 88
Pseudafroneta 57
pseudamoena, Laetesia 56
Psilochorus 35
Pua 42
pudica, Aorangia 85
pudica, Huara 86
puka, Amphinecta 85
pukea, Hexathele 25
pukeiwa, Phoroncidia 62
puketoru, Phoroncidia 62
pula, Pakeha 87
pula, Rinawa 65
pulcher, Cycloctenus 90
pulcherrima, Laetesia 56
pullata, Dunedinia 56
pullus, Attus 72
pumilio, Maniho 86
pumilio, Theridion 62
puna, Stanwellia 26
puna, Tararua 81

punctata, Parapua 42
punctata, Taphiassa 42
punicapunctatum, Theridion 62
punta, Zealanapis 54
purpurapunctata, Eryciniolia 50
pusilla, Textricella 42
pusilla, Tinytrella 42
pustulosa, Eriophora 12, 48
putuna, Hexathele 25

Q

quadrata, Phoroncidia 62
quadrigyna, Porrhothele 25
quadromaculata, Cambridgea 78
queribunda, Novaranea 48, 49
quintus, Migas 27

R

rakiura, Mamoea 85, 86
rakiura, Nomaua 60
rakiura, Orepukia 81
rakiura, Pahora 60
rakiura, Tangata 34
ralphi, Anoteropsis 95
ramsayi, Cambridgea 78
ramsayi, Hexathele 25
ramsayi, Pounamuella 34
ramulicola, Matachia 82
Rangitata 21, 86
Rapua 82
raroa, Runga 60
ratuma, Tararua 81
raua, Neoramia 80
ravus, Jotus 73
Rayforstia 42
redacta, Haplinis 57
redacta, Orepukia 81
reducta, Cantuaria 28
regia, Stanwellia 26
Reinga 21, 86
reinga, Alistra 65
reinga, Cambridgea 78
reinga, Hapona 83
reinga, Nomaua 59
repanga, Nomaua 60
Rhomphaea 61, 62
rima, Porioides 65
rimutaka, Nomaua 60
Rinawa 65
riparia, Orepukia 81
robustus, Ixeuticus 82
rogenhoferi, Hemicloea 18, 67, 76
Rorea 21, 86
rotoiti, Wiltonia 34
ruahine, Waiporia 34
rubella, Mahura 80
rubra, Forstrarchaea 44
rubrioides, Oramia 80, 81
rubrofrontus, Philodromus 74
rufa, Mamoea 86
rufipes, Nesticodes 61, 62
rufocephala, Haplinis 57
rufoflava, Paradictyna 64
rufolineata, Meta 50
rufula, Mahura 80
Runga 60
rupicola, Gasparia 83
rupicola, Haplinis 57
rupicola, Hexathele 25
rustica, Gasparia 83

S

sabua, Orepukia 81
saeva, Segestria 30
sagittiger, Dolomedes 94
salmoni, Dunstanoides 86
salmoni, Hapona 83
salmoni, Paralobus 34
salmoni, Rayforstia 42
Salticidae 12, 17, 46, 72, 73, 93
SALTICIDAE 72
Salticus 72
sana, Goyenia 82
sana, Mangua 60
sandageri, Migas 27
satura, Otira 87
saxatilis, Clynotis 73
saxatilis, Migas 27
saxitalis, Zealaranea 49
scatula, Clubiona 69
schauinslandi, Allotrochosina 95
schauinslandi, Dolomedes 94
scindus, Attus 72
scitula, Goyenia 82
scitulus, Neomyro 83
Scotophaeus 77
Scotospilus 65
scuta, Duripelta 33
scuta, Mahura 80
scuta, Rayforstia 42
Scytodes 36
Scytodidae 16, 35, 36, 37, 41
SCYTODIDAE 36
secunda, Cambridgea 78
secunda, Cantuaria 28
s*ecunda, M*angua 60
secundus, Migas 27
Segestria 30
Segestriidae 16, 30, 31, 37, 41
SEGESTRIIDAE 30
segmentata, Meta 48
segrega, Artoria 95
semita, Aorangia 85
senica, Anoteropsis 95
sennio, Australomimetus 39
separata, Artoria 95
septemcincta, Ariadna 30
septentrionalis, Neolana 86
setosa, Neoramia 80
setosus, Mesudus 82
Sidymella 74
signata, Intruda 76, 77
signata, Rayforstia 42
silvestris, Aorangia 85
silvestris, Promynoglenes 57
silvicola, Haplinis 57
similanus, Episinus 62
similis, Haplinis 57
similis, Matachia 82
similis, Orepukia 81
similitudus, Episinus 62
simoni, Psilochorus 35
simplex, Diploplecta 56
simplex, Orepukia 81
sinata, Intruda 76
sinclairi, Cantuaria 28
singularis, Aorangia 85
sinuosa, Metafroneta 57
solanderensis, Cambridgea 78
solanderensis, Oramia 81
solitaria, Kapanga 65
solitarius, Mesudus 82
solitarius, Migas 27
sorenseni, Gradungula 29, 94, 95
sorenseni, Mahura 80
sorenseni, Neororea 86
sorenseni, Orepukia 81
southgatei, Mahura 80
Sparassidae 18, 67, 74
SPARASSIDAE 67
Spelungula 29
sphaeroides, Diaea 74
spinipes, Ischalea 78
spinipes, Novanapis 54
spinosa, Mahura 80
spinosoides, Mahura 80
squalidum, Theridion 62
Stanwellia 26
Steatoda 12, 61, 62
stephenensis, Cantuaria 28
Sternoidinae 40
stewartensis, Cryptaranea 48
stewartensis, Subantarctia 34
stewartensis, Tangata 34
stewartia, Pakeha 87
stewarti, Cantuaria 28
Stiphidiidae 1, 12, 20, 78
STIPHIDIIDAE 78
Stiphidion 78
Storeninae 66
stratioticum, Cheiracanthium 18, 89
striatipes, Dictis 36
suba, Muritaia 87
subalpina, Cryptaranea 48
subalpina, Parafroneta 57
Subantarctia 34
subantarctica, Parafroneta 57
subclathrata, Haplinis 57
subcompta, Cryptaranea 48
subdola, Haplinis 57
subfuscus, Attus 72
subitaneus, Microctenonyx 56
subrufa, Deinopis 46

subtecta, Pakeha 87
subterraneus, Anopsolobus 16, 33
subtilis, Haplinis 57
subversa, Metafroneta 57
sulcata, Maorineta 56
sundevallii, Hemicloea 76
Supunna 70
suterii, Periegops 37
suteri, Synema 74
sylvarus, Plexippus 73
sylvatica, Cambridgea 78
sylvatica, Cantuaria 28
sylvatica, Goyenia 82
sylvester, Tangata 34
Symphytognathidae 53
Synema 74
Synotaxidae 1, 23, 35, 55, 58, 59
SYNOTAXIDAE 59

T

tabinus, Salticus 72
Taieria 76
taierii, Migas 27
takahea, Mahura 80
Taliniella 42
tama, Amphinecta 85
tanea, Orepukia 81
Tangata 34
tapa, Nauhea 76, 77
tapanuiensis, Panoa 82
Taphiassa 42
Taphiassinae 42
taranakii, Haplinis 57
taranaki, Pahora 60
taranga, Nomaua 60
taranga, Stanwellia 26
Tararua 80, 81
tararua, Hapona 83
tarsa, Mahura 80
tasmani, Migas 27
tasmani, Porioides 65
taumara, Hexathele 25
taupo, Ascuta 33
tautuku, Tangata 34
Tautukua 34
Tawerana 65
tecta, Pakeha 87
Tegenaria 80
tegulata, Haplinis 57
Tekella 58, 61
Tekelloides 58, 61
tenebricus, Salticus 72
tenebrosus, Attus 72
Tengellidae 20, 88
TENGELLIDAE 88
Tenuiphantes 56
tenuis, Tenuiphantes 12, 56
tepakia, Gasparia 83
tepidariorum, Parasteatoda 12, 61, 62
terricola, Otira 87
Tetragnatha 24, 46, 50, 51, 78
Tetragnathidae 11, 24, 46, 48, 50, 51, 63, 78
TETRAGNATHIDAE 50
Tetragnathinae 50
tetragyna, Meringa 60
Textricella 42
Tharpyna 74
Theridiidae 12, 23, 38, 39, 42, 52, 54, 55, 58, 59, 61, 62, 72
THERIDIIDAE 61
Theridion 61, 62
Theridiosomatidae 3, 23, 48, 52, 53, 54
THERIDIOSOMATIDAE 52
thilenii, Megadictyna 63
Thomisidae 18, 67, 74, 106
THOMISIDAE 74
thoracica, Scytodes 36
tibialis, Maorineta 56
tigris, Maniho 86
Tinytrella 42
titan, Haplinis 57
titirangia, Zelanda 76, 77
toddae, Cantuaria 28
toddae, Migas 27
tokaanuae, Haplinis 57
tonga, Orepukia 81
tongariro, Ascuta 33
tongatabuensis, Geolycosa 95
toronui, Waipoua 34
torta, Clubiona 69
totara, Duripelta 33
totara, Waipoua 34
townsendi, Duripelta 33
townsendi, Tangata 34
Toxopidae 41
Toxopinae 20, 82, 83
Toxopsiella 90
Toxopsoides 83
triangulatus, Ariamnes 62
tridentatus, Dolomedes 94
trilobata, Cyclosa 48
trina, Subantarctia 34
trinotata, Zealaranea 49
trippi, Dolomedes 94
trispathulata, Laetesia 56
Trite 73
trituberculosa, Novakiella 49
Trogloneta 53
truncata, Novafroneta 57
truncata, Steatoda 62
tuaiensis, Gasparia 83
Tuakana 82
Tuana 65
Tuapoka 81
Tuata 65
tuata, Waiporia 34
tuberosa, Celaenia 48
tuhoe, Migas 27
tuiae, Cambridgea 78
tula, Amphinecta 85
tumida, Aorangia 85
tumida, Maorineta 56
tuna, Alistra 65
tuna, Stanwellia 26
turbotti, Cambridgea 78
turbotti, Pholcomma 61, 62
turbotti, Subantarctia 34
Turretia 34
turris, Mahura 80

U

Uliodon 12, 92, 94, 95
Uliodoninae 92
Uloboridae 15, 47
ULOBORIDAE 47
ulva, Lamina 83
unica, Anaua 90
unica, Mamoea 86
unica, Uzakia 19, 67, 90
unicolor, Bealeyia 33
unisetosa, Tekella 58
univa, Ascuta 33
urewera, Paramamoea 86
urquharti, Anoteropsis 95
urquharti, Dictyna 64
urquharti, Nomaua 60
urquharti, Rhomphaea 62
urvillei, Trite 73
Uzakia 90

V

valentulus, Attus 72
valida, Matua 77
vallus, Oparara 86
vella, Mahura 80
vellosa, Cantuaria 28
venatoria, Heteropoda 67
Venatrix 95
Venoninae 95
venustula, Cryptaranea 48
versuta, Tararua 81
veruculata, Achaearanea 61
veruculata, Cryptachaea 12, 61, 62
verutum, Colaranea 48
victorialis, Isopedella 67
villosa, Isopeda 67
vinki, Taliniella 42
viridanum, Theridion 62
Viridictyna 64
viriditas, Colaranea 48
virtuta, Orepukia 81
v-notatus, Salticus 72
vulgaris, Ahua 80
vulgaris, Maniho 86
vulgaris, Maoriata 34
vulgaris, Novafroneta 57
vulgaris, Pounamuella 34
vulgaris, Rayforstia 42

W

waikanae, Nomaua 60
waikaremoana, Nomaua 60

waipa, Hexathele 25
Waiporia 34
Waipoua 34
waipoua, Paramamoea 86
waipoua, Reinga 86
waipoua, Tangata 34
waipoua, Zealanapis 54
wairarapa, Haplinis 57
Wairua 59
waita, Hexathele 25
waitakerensis, Waitkera 47
Waitetola 87
Waitkera 47
wanganuiensis, Cantuaria 28
Waterea 21, 86
watti, Duripelta 33
weburdi, Laetesia 56
westlandica, Anoteropsis 95
westlandica, Mamoea 86
westlandica, Parafroneta 57
westlandicus, Cycloctenus 90
westlandicus, Laestrygones 83
westlandicus, Scotospilus 65
whangamoa, Orongia 34
whangarei, Pahoroides 60
white-tail spiders 75
Wiltona 88
Wiltonia 34
wiltoni, Erigone 55, 56
wiltoni, Hexathele 25
wiltoni, Kapanga 65
wiltoni, Notomatachia 82
wiltoni, Otagoa 83
wiltoni, Pahora 60
wiltoni, Tuakana 82
wiltoni, Waiporia 34
wisei, Oramiella 81
wisei, Rayforstia 42
Wugigarra 35

X

x-notata, Zygiella 49, 50

Z

zantholabio, Theridion 62
zanthrofrontalis, Salticus 72
Zealanapis 54
Zealaranea 49
Zealoctenus 89
Zearchaea 45
Zearchaeinae 45
Zeatupua 59, 60
Zelanda 76, 77
Zodariidae 20, 66
ZODARIIDAE 66
Zoridae 17, 71
ZORIDAE 71
Zoropsidae 12, 17, 68, 92, 94, 95
ZOROPSIDAE 92
Zygiella 49

Australomimetus sennio

Pacificana cockayni

Trogloneta sp.

Cambridgea quadromaculata

Huttonia sp.

Haplinis major

Argoctenus sp.

Uliodon sp.

Sidymella sp.

Megadictyna thilenii

Malkaridae sp.